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A Summary of Current Program, 9/30/67

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and Preliminary Report of Progress

for 10/1/66 to 9/30/67

MARKETING ECONOMICS DIVISION

of the

ECONOMIC RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

and related work of the

STATE AGRICULTURAL EXPERIMENT STATIONS

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CURRENT RECORDS

This progress report is primarily a tool for use of scientists and administrators in program coordination, development and evaluation; and for use of advisory committees in program review and development of recommendations for future research programs.

The summaries of progress on USDA and cooperative research include some tentative results that have not been tested sufficiently to justify general release. Such findings, when adequately confirmed, will be released promptly through established channels. Because of this, the report is not intended for publication and should not be referred to in literature citations. Copies are distributed only to members of Department staff, advisory committee members and others having a special interest in the development of public agricultural research programs.

This report also includes a list of publications reporting results of USDA and cooperative research issued between October 1, 1966, and September 30, 1967. Current agricultural research findings are also published in the monthly USDA publication, Farm Index. This progress report was compiled in the Marketing Economics Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.

UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D.C.

October 1, 1967

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INTRODUCTION

Research on economic problems in agricultural marketing is centered in the Marketing Economics Division. Research is conducted on national and regional marketing problems that arise in moving the nation's output of food and fiber from producers to consumers. In addition to the long-range, on-going research work the staff conducts, short-term analyses on problems needing immediate attention as requested by the Secretary of Agriculture and other officials in the conduct and operation of departmental programs. The overall objective of the Division is the evaluation of the performance of the marketing system as it relates to the efficiency with which the system operates and the equitable distribution of benefits to those performing services. The research effort is forward-looking in examining changes taking place in marketing and the implication of these changes to both producers and consumers.

The work of the Division is integrated so that the total research effort is brought to bear on major problems involved in maintaining a viable marketing system. Each new research undertaking is closely examined to see that it complements and/or supplements the existing program.

Highlights of some studies and reports completed during the past year include:

Farm-Retail Spreads and the Marketing Bill

The retail cost of the market basket of farm foods averaged about 1 percent lower in 1967 than in 1966. Much of the decrease resulted from lower retail prices of meats, poultry, and eggs. The farm values (returns to farmers) of these products were down 6 percent from the 1966 level. Lower prices for meat animals, poultry, and eggs accounted for much of the decrease. The spread between the retail cost of these foods and the farm value was 2 percent wider in 1967 than in the preceding year. Bakery and cereal products accounted for about half of the increase.

The total bill for marketing farm-originated foods totaled \$58 billion in 1967, up \$3 billion from 1966. The percentage increase was slightly larger than the average annual increase in the previous decade. Increases in unit marketing charges contributed more to the rise in the marketing bill in 1967 than a 2 percent expansion in the volume of products marketed. Expenditures by civilian consumers for these products rose to \$85 billion compared with \$83 billion in 1966. Returns to farmers from these products declined to \$27 billion from \$28 billion in 1966, as a result of decreases in prices farmers received for many of these products.

Away-From-Home Market for Food

Preliminary findings of Phase I of a two-part study of the away-from-home market for food indicate that food service is available in more than 367,000 establishments in the United States. Over 90 percent of these establishments are public eating places. Nearly 3.3 million persons man these outlets in which more than

100 million individual transactions take place daily. The annual retail value of food and nonalcoholic beverages served is approximately \$22 billion. The cost of this food is \$9.6 billion. These figures do not include the military services, elementary and secondary schools, in-transit food services, correctional institutions, and Federal hospitals. Inclusion of food services offered by these outlets which were not included in the survey would raise the annual retail value of food services away from home to an estimated \$28 billion. Phase II of the survey which will begin in late 1967 will involve collection of detailed individual product information on the quantities of food received by food service establishments.

Impact of Product and Process Innovations on Marketing System

The productivity of plants in the baking industry employing the continuous mix process increased 27 percent between 1956 and 1964. By comparison, the total industry's productivity (measured by crude value added in both cases) rose 8 percent. At the same time average hourly wages for production workers in plants adopting continuous mix rose more than those for the baking industry (11 percent for continuous mix and 8 percent for the total industry). Introduction of the continuous mix process also appears to have contributed to a decline in the number of baking plants with an attendant decline in the number of production workers in the industry. The new process, however, caused no decreases in employment in the plants where it was introduced.

Foam spray-dried whole milk, a new product developed in the Department of Agriculture, was rated acceptable for beverage use by managers of selected institutions where trials were conducted. The product which has not been introduced commercially appears to have two major cost advantages over fresh fluid milk: (1) relatively low raw material costs in the areas of production, and (2) reduced distribution costs. Also, because of its longer shelf life it can be purchased in large quantities and stored until needed. Some institutions had reservations about the foam that formed on the surfaces of the reconstituted milk and their ability to comply with health regulations in reconstituting and dispensing the product.

Starch, the main component of cereal grains, requires new and expanded industrial uses to provide price stability and orderly marketing in cereal grain markets. A study was initiated in the past fiscal year in cooperation with the Northern Utilization Research and Development Division of ARS to analyze the competitive status of starch in textile manufacturing uses and assess its outlook in this important industrial market. A significant finding of the research was that starch should be able to maintain its hold on the textile sizing market if its processing performance can be improved in relation to synthetic resins. While starch will probably maintain its present consumption level in textile manufacture and growth appears possible, it will be difficult to attain and at a low rate unless technological improvements occur. The study also outlines several areas where more information is needed to fully assess starch's vulnerability to replacement in textile manufacturing uses.

Costs of Handling and Storing Farm Commodities

Costs were developed for four basic services performed as a part of peanut handling and storage: cleaning and drying, receiving, loadout, and storage. Average standardized cost per ton of cleaning and drying varied from \$0.17 per ton received for Virginia-North Carolina shellers to \$4.06 per ton received for independent warehouses in the Southeast. The low cost for Virginia-North Carolina shellers is due to the small percentage of receipts cleaned and dried by this group of plants. Standardized receiving costs averaged \$2.10 per ton for all facilities and average standardized load-out costs were \$1.26 for all facilities. Average standardized storage costs per ton-month stored ranged from \$0.51 for Virginia-North Carolina shellers to \$1.46 for Virginia-North Carolina warehouses. The higher storage cost of Virginia-North Carolina warehouses was due to their low average rate of occupancy and to the short average period of storage.

Generally, storage and handling costs for independent warehouses were higher than for sheller operated storage facilities. Replacement costs, computed to estimate long-run competitive rates, followed the same pattern as standardized costs in all areas for all services.

Cotton Ginning and Quality Evaluation

An engineering-economic study was completed developing specifications and estimated costs for model cotton ginning plants. Ten different models, ranging in capacities from 6 to 24 bales per hour, were recommended both for machine-picked and machine-stripped harvest areas. Sources of data were mainly secondary. Economies of scale were evident from the operating cost estimates which showed an average of nearly \$5.00 per bale less in the largest model compared to the smallest, both operating at full capacity. Hence, the 24-bale model was recommended as optimal for large, new producing areas, where gin plant populations and production densities are not already limiting factors. Diseconomies resulting from reductions in volumes ginned were also emphasized. Researchers concluded that, with the exception of the 2 smallest models, ginning costs for any of the gin models operating at the 100, 90, or 80 percent of full capacity would always be lower than for the next larger size operating at 90, 80, or 70 percent of capacity, respectively.

Research results showed that although grade, staple, and micronaire determinations were highly related to spinning performance and yarn quality, spot market prices for cotton based on these three factors had almost no relationship to either performance or product quality. A new set of "weights" for the three fiber qualities were obtained from regression analyses and used to calculate a set of adjusted prices. These adjusted prices reflected about two-thirds of the variation in measurements of processing performance and yarn quality, indicating that the factors now used in marketing cotton can be used more effectively to establish prices which are related to use value, as better information is obtained on which to base their relative "weights." It appears that, at present, too much weight is given to differences in grade and that too little weight is given to length characteristics and micronaire in establishing the market price.

Meeting Domestic Food Needs

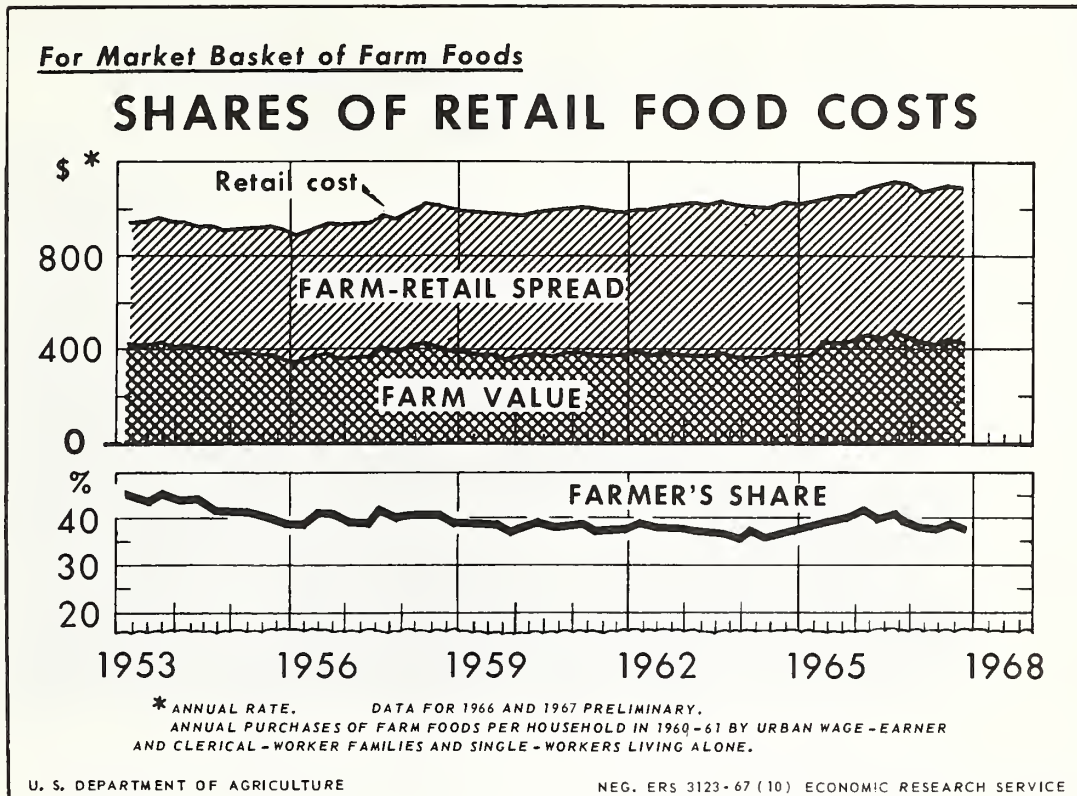
To provide assistance and guidance in the operation of the Department's food assistance programs so as to better meet the food needs of low-income people, a special survey was made of low-income households in two Mississippi Delta counties. The mid-April 1967 evaluation was specifically concerned with food needs and how they were being met through the Food Stamp Program in one instance and the Commodity Distribution Program in another. In Sunflower County the Commodity Distribution Program was found to be reaching nearly all the eligible families. The Food Stamp Program in Washington County was serving about 43 percent of the eligible families. However, this Program had been in operation less than two months and experience in other areas indicates that peak participation requires 4 to 5 months of operation.

Competition and Pricing in Agricultural Marketing

A continuing study of egg pricing indicates that in the last decade, the Midwest has been increasingly challenged by the rise of a new egg industry in the South and intensified commercial developments in some older egg-producing regions. If the Midwestern egg industry is to avoid further loss of its share of the nation's egg business, it will have to make substantial changes. Some firms have already begun to change their traditional ways of doing business. But further changes in the size and location of producing units, in the input-supplying industries, and in marketing practices and channels are needed. Otherwise, the Midwest may continue to lose out to other areas. The Midwest will need to improve egg quality, develop greater production desnity, and have larger flocks. Increased coordination of producing, input-supplying, and marketing functions is needed. Such complexes can do a better job of supplying regular outlets with the kinds and quantities of eggs they need, whether the outlet is for table eggs or breaking stock. More direct marketing channels can also result.

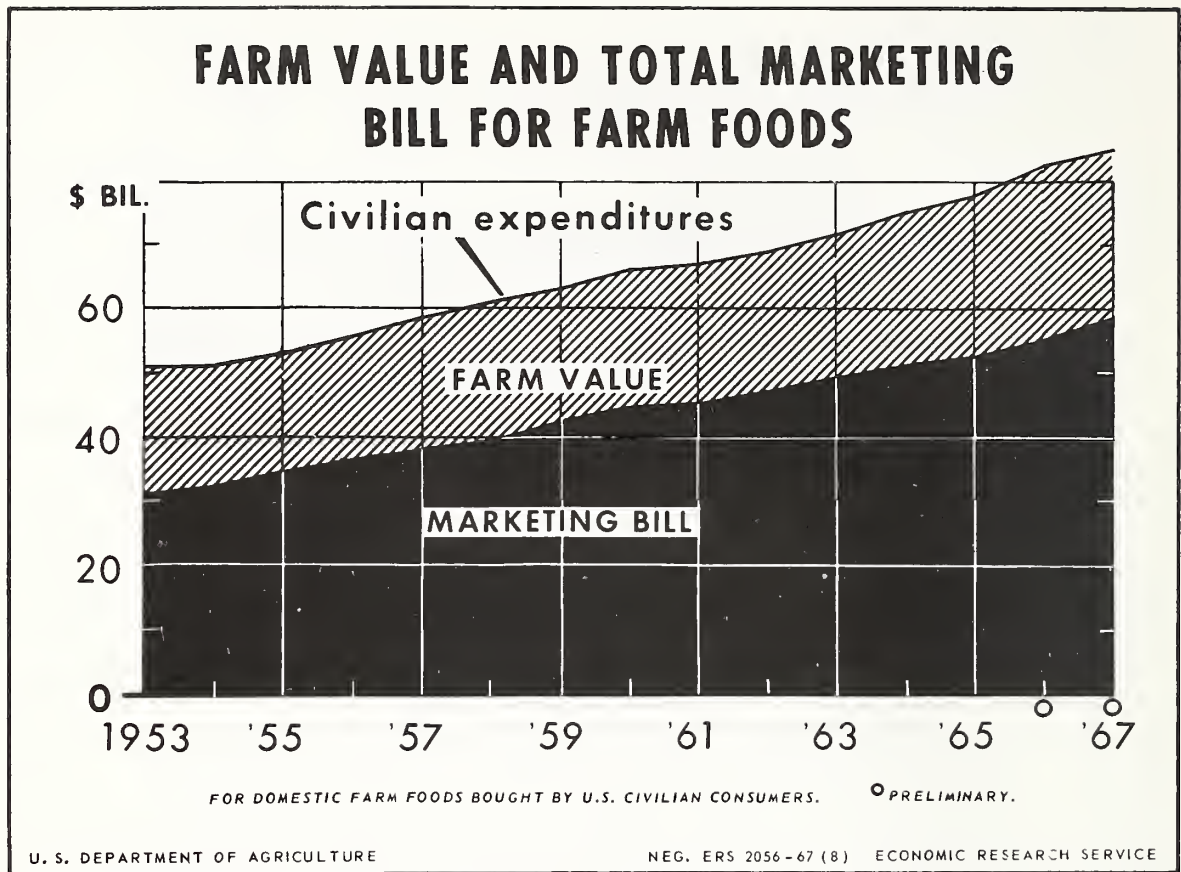
Graphic illustrations of work carried out in the Division include:

Figure 1



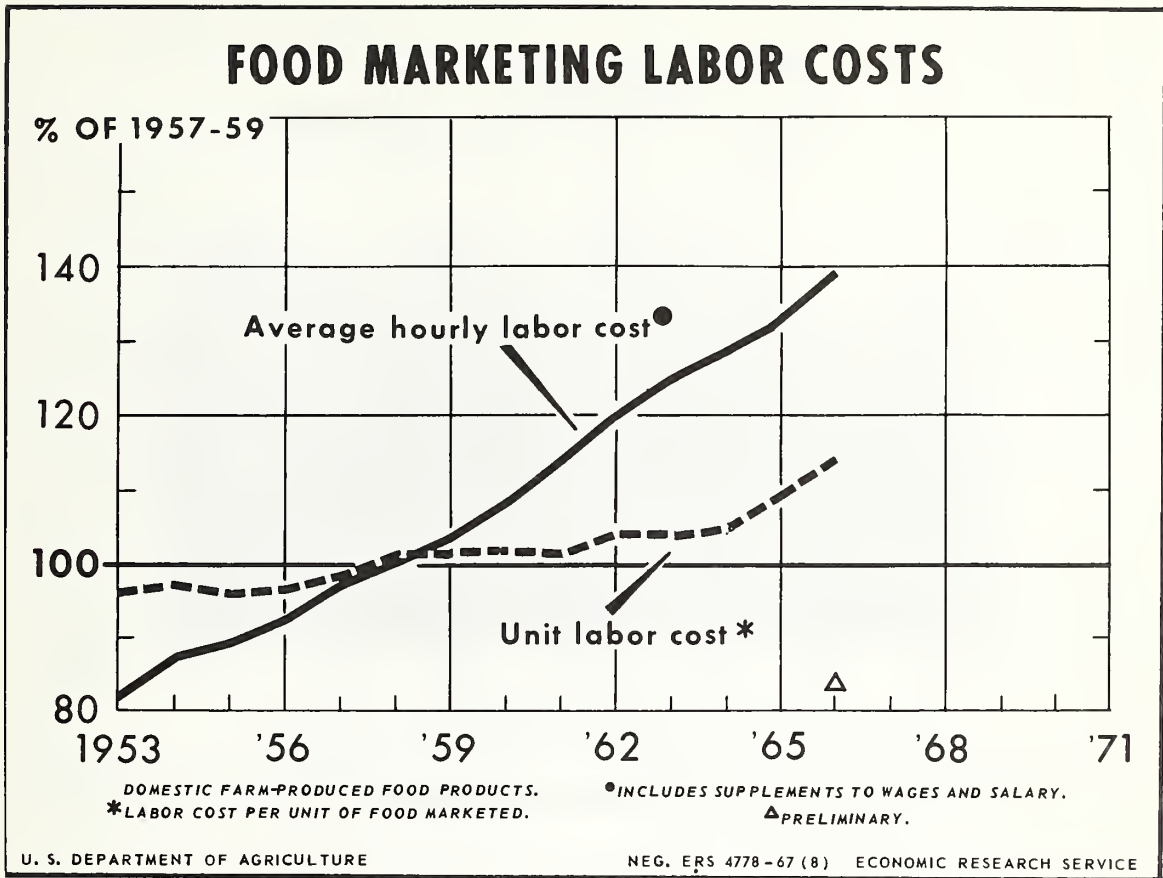
Falling prices for hogs, chickens, and eggs accounted for much of the decline in the farm value (returns to farmers) and retail cost of the market basket of farm-originated foods in 1967. Marketing spreads widened by about 2 percent--about the same as the average annual increase during the preceding decade. Farmers received 38 cents of the dollar consumers spent for these foods in 1967, 2 cents less than the share received in 1966. During 1957-66, the farmer's share varied from 37 to 40 cents.

Figure 2



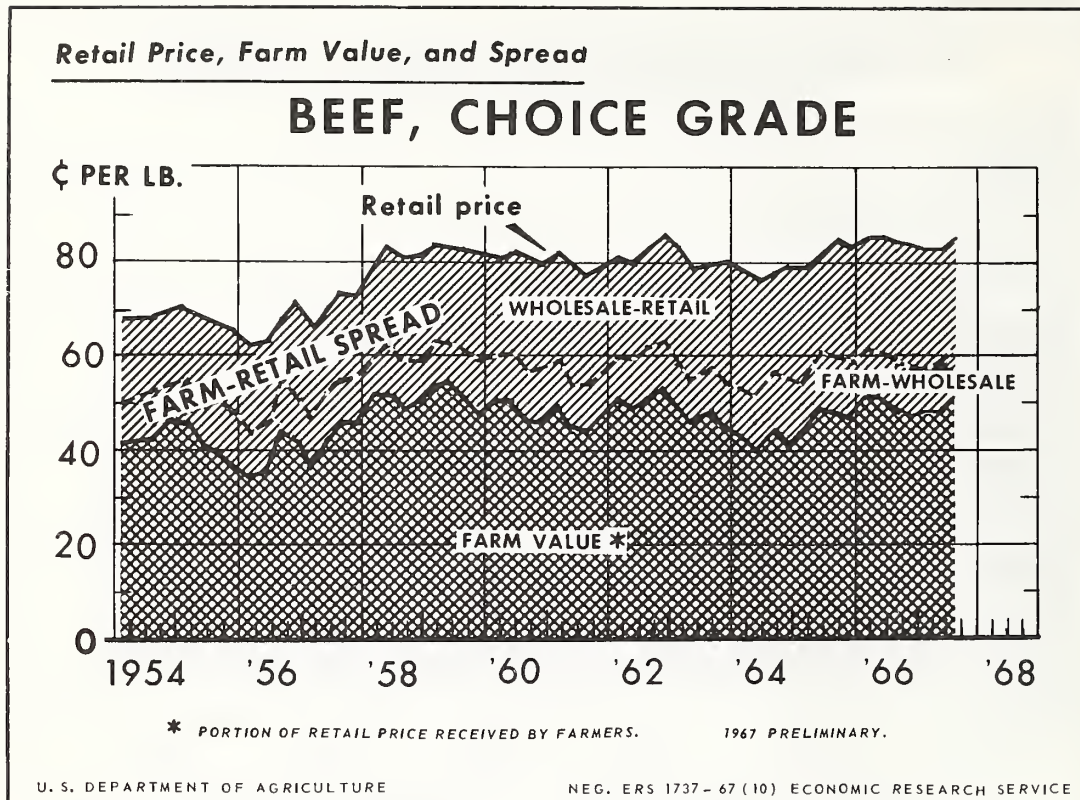
The bill for marketing farm-originated foods to consumers in this country amounted to \$58 billion in 1967--5 percent more than in the preceding year. Growth in the volume of products marketed, increased marketing services per unit of product, and rising costs of performing marketing operations have brought increases in the marketing bill in every year since 1950. Decreases in prices farmers received for these products reduced returns to farmers (the farm value) by 2 percent in 1967 despite a slight increase in the volume of products marketed. The decrease in the farm value, however, was offset by the increase in the marketing bill, so the consumer expenditures for these products rose.

Figure 3



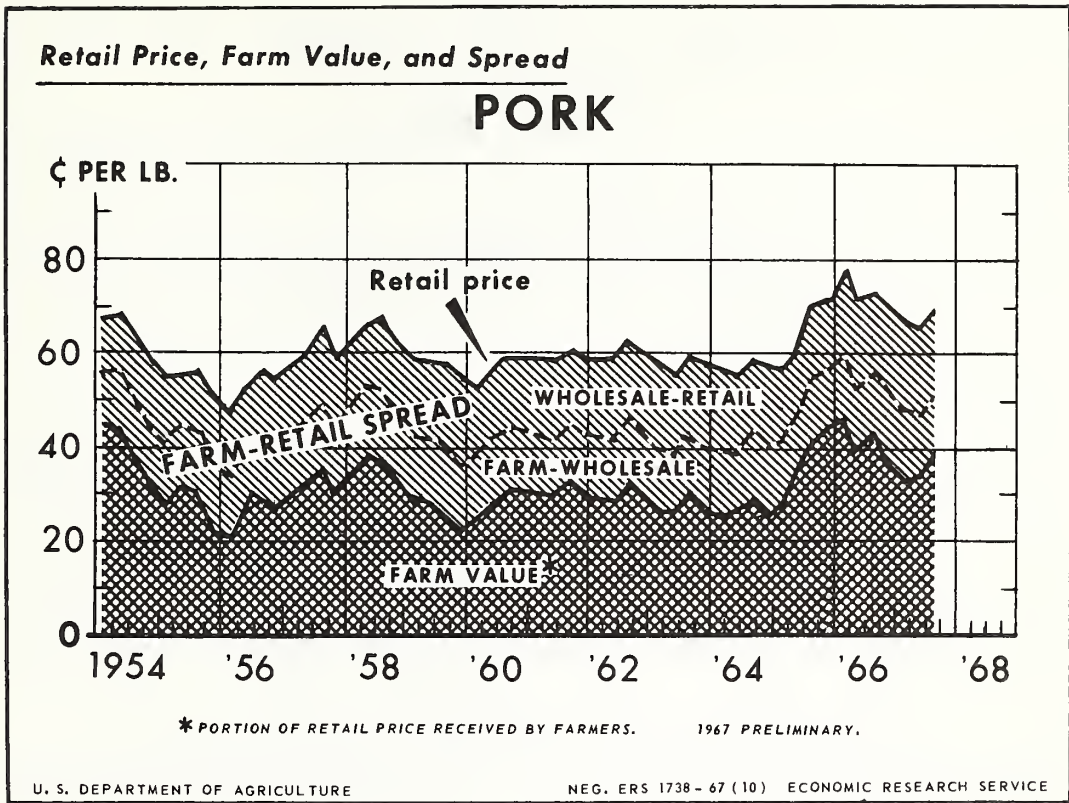
Labor costs per hour (payrolls plus fringe benefits per man-hour) in food marketing industries were 39 percent higher in 1966 than in 1957-59. But substantial gains in output per man-hour held the increase in labor costs per unit of product marketed to 14 percent.

Figure 4



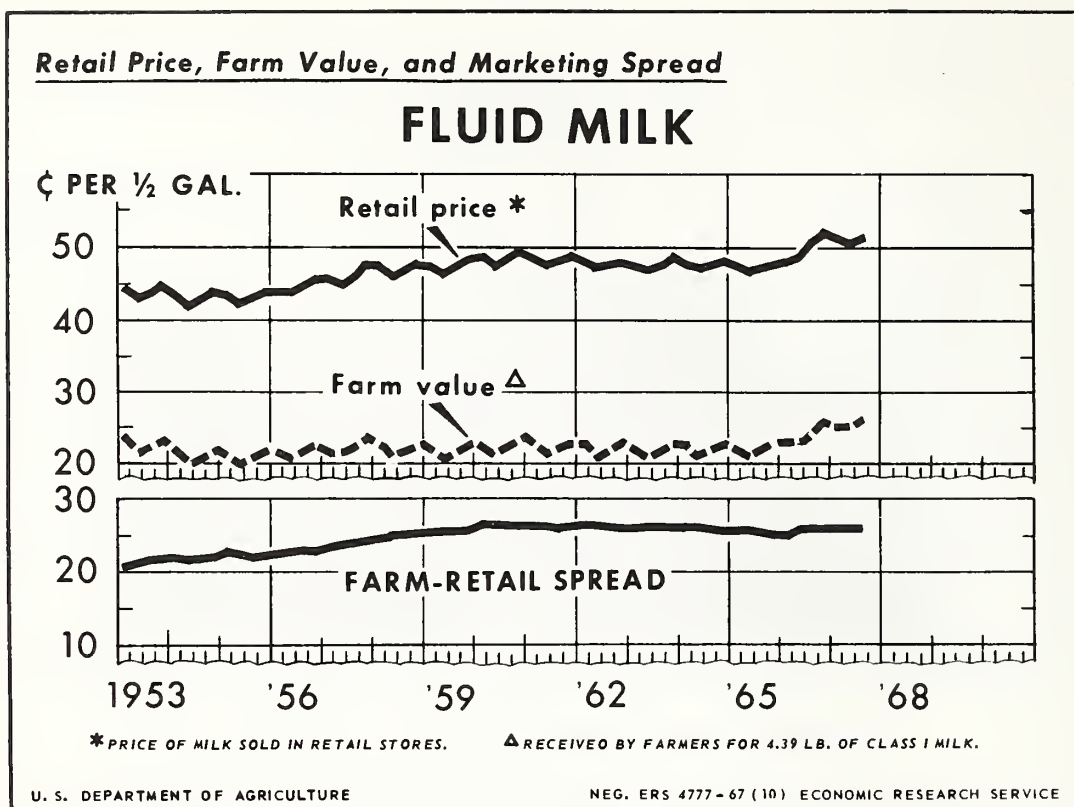
The farm-retail spread for Choice beef increased to a record size in the final quarter of 1966, when the retail price decreased less than the farm value (returns to farmers). In the first half of 1967, the farm value stabilized, but the retail price declined slightly. In the third quarter, the retail price rose less than the farm value. Thus, the spread decreased slightly in each of the first 3 quarters of 1967.

Figure 5



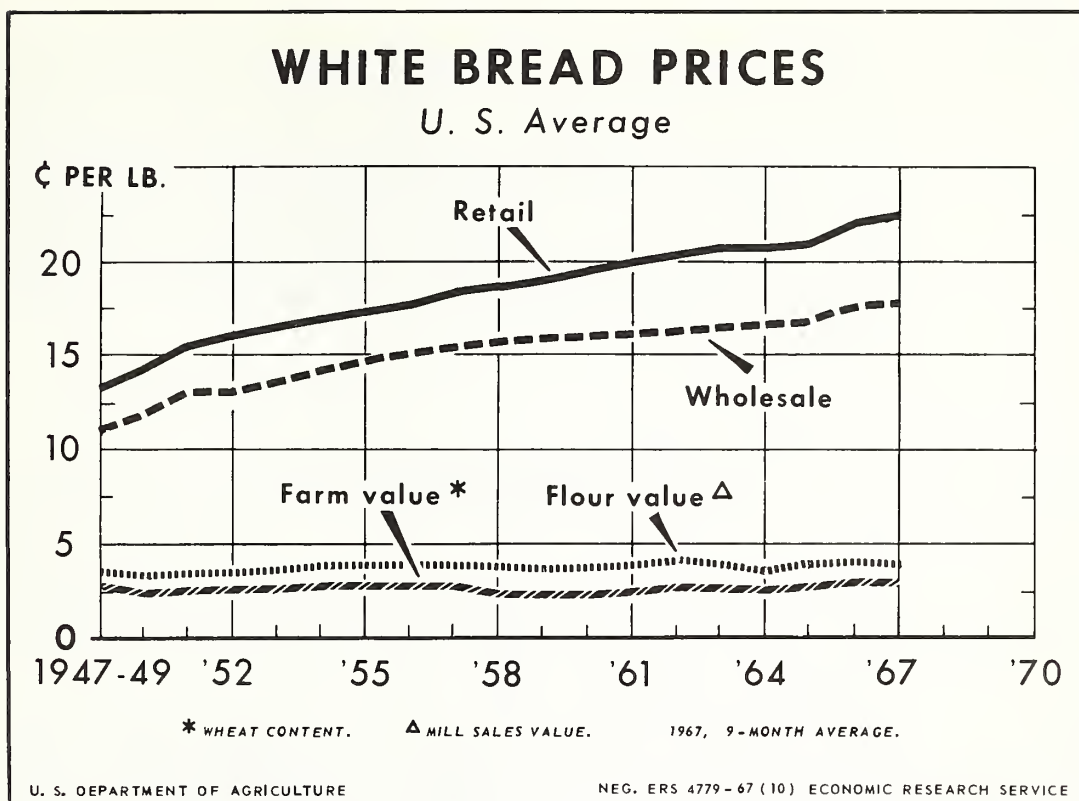
The farm-retail spread for pork increased sharply in the final quarter of 1966, when the retail price dropped much less than the farm value. During most of the first of 1966, however, the retail price declined more than the farm value, and the spread decreased. It also decreased in the late spring and early summer when the retail price rose less than the farm value. Frequently the retail price changes less than the farm value and the spread increases or decreases.

Figure 6

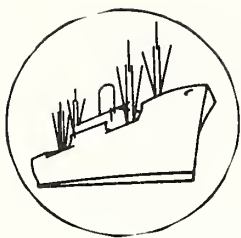


Prices of fluid milk in retail stores rose more rapidly than the farm value during the first half of 1966, and the farm-retail spread widened. Subsequently, both the retail price and farm value have varied together closely, and the spread has changed little.

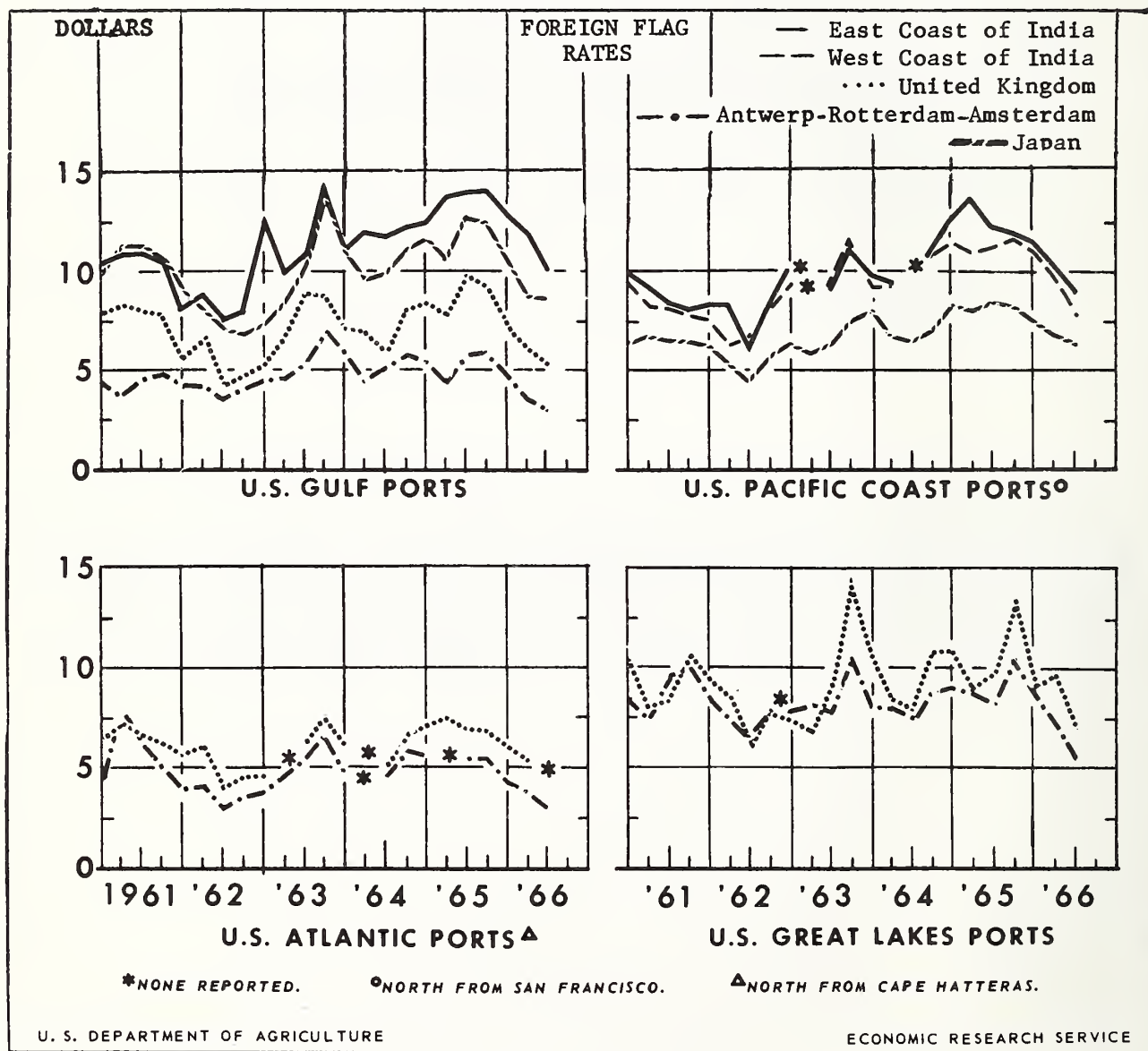
Figure 7



The retail price of white bread averaged higher in 1967 than in 1966, although it receded slightly from the record level reached late in 1966. The wholesale price also averaged higher than in 1966, although it too weakened during 1967. Returns to farmers for the wheat in a loaf and the cost of flour to bakers each averaged a little lower in 1967. The spread between the retail price and farm value has increased nearly every year since World War II. Much of the increase has been in the portion of the spread received by bakers.



GROWING COMPETITION WITHIN AND AMONG DOMESTIC TRANSPORTATION agencies has been evident for some time. It also is evident from the charts below that there is considerable similarity in trends of average voyage charter rates per short ton for corn, wheat and soybeans between major U.S. port ranges and foreign port ranges. This tends to result in port of export being determined by adjustments in domestic rates. There is intensive competition among ports in attempts to obtain favorable domestic rates.



MARKETING ECONOMICS RESEARCH

Problem: Economic research in agricultural marketing provides a framework for developing and maintaining an effective and efficient system of marketing farm products and assuring equitable returns to farmers and marketing agencies. The marketing of farm products continues to become more complex and dynamic because of advances in technology, changes in composition and location of the population, and demands for meeting food and fiber needs in a large part of the world. Not only are structural changes taking place within the marketing segment of the economy but large segments of the processing industry are relocating to meet shifts occurring in labor resources, transportation rates and services, and consumer markets. Producers and distributors must be armed with the most up-to-date and accurate information available to cope with and adjust to changes occurring within and outside the agricultural economy.

Within the framework of the competitive system the food and fiber industries must perform in an efficient manner to maintain viable industries and help sustain a high standard of living. Marketing economics research provides a service in collecting, analyzing and publishing objective information. The information furnished through research is a form of market intelligence which the private enterprise system utilizes in making sound decisions in the marketing of farm products. Likewise, research findings provide a basis for developing guidelines in public policy as well as concepts for needed new legislation.

Marketing research helps facilitate the communication of consumer wants and desires back through the marketing system to the producer. As never before, information is needed to guide and direct the production and development of new products to meet the demands of a rapidly changing population. Producers, processors, and distributors must constantly seek an understanding of the economics of product quality, variety, and substitution to be responsive to consumer demands and utilize resources efficiently.

Market intelligence through research in the Division is furnished in areas such as: measurement and evaluation of changes in the structure of the market and the impact of changes on producers, processors and distributors; performance of the market in terms of efficiency and equity are continually being assessed; farm-retail spreads are maintained on a continuing basis for the major commodities and reported specifically to a congressional committee as well as to the general public; studies in interregional competition, pricing, and transportation form a part of the research program; evaluation of public programs as they relate to the farm economy and public welfare are analyzed; means of improving farmers' bargaining power in the market place are continually under study; and work in utilization economics as it pertains to new products and processes form a part of the research effort. Information furnished through research in these and other areas establish a basis for adjusting to change, keeping abreast of technological and scientific developments, building a marketing system responsive to demands of consumers and formulating sound policy decisions, both public and private, as they relate to marketing food and fiber.

USDA AND COOPERATIVE PROGRAMS

The Department has a continuing long-term program of economic research designed to provide timely and accurate market intelligence to producers, processors and distributors. The program of work involves both basic and applied aspects of marketing economics research. The program covers commodity and functional problems that are regional or national in scope. In addition to the long-term, on-going research work of the Division, frequently short-term, service-type assignments are carried out for the Secretary of Agriculture or other agencies within the Department having specific problems for which the staff of the Division is uniquely equipped to analyze and make recommendations.

Research studies are often conducted in cooperation with other USDA agencies, other Federal departments, and State Agricultural Experiment Stations. On occasion, cooperative work is undertaken with processors and distributors of agricultural products, transportation agencies, and agriculturally oriented groups. Financial contributions to the Division's research efforts are sometimes made by industry groups which provide a strengthening of the research effort.

The research program and related program activities are conducted from headquarters in Washington, D. C. A limited number of field stations are located throughout the United States, a major part of them being at land-grant institutions. Field station personnel perform a special service by keeping the Division alerted and informed on emerging problems in marketing as well as conducting joint research projects with station personnel. Also, economists are located at each of the four USDA Utilization Research and Development Laboratories. The scientific effort devoted to marketing research during the reporting year amounted to approximately 118 professional man-years.

PROGRAM OF STATE EXPERIMENT STATIONS

A. Efficiency of Resource Allocation in Marketing

A total of 141.8 scientist man-years is devoted to this area of research.

B. Competitive Situation of Input and Output Marketing Firms

A total of 17.0 scientist man-years is devoted to this area of research.

C. Bargaining and Income Position of Farmers in Marketing

A total of 2.3 scientist man-years is devoted to this area of research.

D. Role of Consumers in Marketing

A total of 17.0 scientist man-years is devoted to this area of research.

E. Location and Growth Economics

A total of 24.7 scientist man-years is devoted to this area of research.

PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Efficiency of Resource Allocation in Marketing

Research on the efficiency of performing the marketing functions evaluates the impacts of reduced costs and subsequent adjustments on farmers, marketing agencies and consumers. It relates to the adoption of new technology and innovations by marketing firms and its affect on costs of distributing farm products. In some cases, evaluation of alternative methods of performing the marketing functions is made possible through generating input-output coefficients which demonstrate least-cost methods of performing an individual function. Relationships are shown between costs and alternative methods (innovation and technology) or between costs and volume (economies of scale). Research which describes the flow of products through the various marketing channels is designed to provide sufficient background knowledge to evaluate efficiencies in performing the various marketing functions.

Livestock

Packers' delivery costs for mixed loads of meat averaged 83.7 to 87.3 cents per hundredweight for average hauls of 160 and 220 miles with average loads of 8,600 and 10,600 pounds under winter and summer conditions. Detailed analysis showed (1) varying road and traffic conditions could account for up to 30 percent variation in driver man-hours for identical loads and distances, (2) truck and driver costs each accounted for about 40 percent to 60 percent of total delivery cost, (3) delivery costs increased with length of haul, number of delivery stops, and decreased with larger total loads and average volume per delivery.

A linear programming model of the optimal product mix in hog-slaughtering operations was developed and tested by one meatpacking firm. A forecasting sub-system was used by the firm's management in planning procurement, product flow and marketing strategy. An allocation sub-system determined the optimal procurement and product flow. A comparative performance report compared actual firm performance with the optimum. This model was then generalized for use by any firm.

Poultry and Eggs

In a study of least-cost systems of assembling, processing and distributing eggs, it was found that when realistic values are assigned to farm labor and equipment, the choice between processing eggs on the farm and in a central plant depends on the size of farm and plant. Generally, processing in a plant is less expensive due to economies of scale and small farm size. Processing in central plants generally is accompanied by increased pickup and delivery cost per dozen. When typical producing unit sizes for Pennsylvania are

considered, the optimum solution excludes all farm processing and includes processing plants located in the areas with most production.

Costs of assembling live turkeys for processing are mainly affected by size of bird, crew size, load size, weather conditions, method of loading, flock size, and density of the production area. Under standardized conditions, density is a much more important consideration than flock size. For a plant requiring 42.4 million pounds of live, heavy-type turkeys per year, and with production density at 20,000 pounds per square mile, total costs of assembling were .26 cents per pound with 5,000 bird flocks and .23 cents per pound with 50,000 bird flocks. For 20,000 bird flocks, costs ranged from .38 cents per pound at a density of 5,000 pounds per square mile to .18 cents per pound at 80,000 pounds per square mile.

Cotton

Continued heavy emphasis has been placed on measures of the use value of cotton, the relationships of processing, and quality specifications for major end uses. Several studies are underway in cooperation with other Departmental agencies at the Cotton Pilot Spinning Laboratory located at Clemson University and/or trade groups. These studies are designed to determine and identify quality factors affecting the end use and value of cotton and to relate these differences in value to price. Particular attention is being given to identifying fiber quality factors and their effect on manufacturing costs. In addition, research studies to determine and analyze textile manufacturing costs and means for minimizing these costs are underway. A recent pilot study of cotton classification and price as related to use value shows that if grade, staple, and micronaire (fineness) are weighted properly, price can reflect about two-thirds of the variation in use value. Research on the effects of gin cleaning, card crusher rolls, and carding rates on spinning quality of Mississippi cotton shows very little differences due to ginning treatments but a significant improvement in performance and quality as a result of varying manufacturing treatments. Grade differences, although wide, showed little relationship to processing performance or to yarn quality. This indicates that from an economic standpoint, the importance of trash was overemphasized in the grading of these cottons.

A study of the marketing and utilization of cotton mill waste showed that mill waste amounts to over one-half billion pounds valued at over \$50 million. It is likely to continue to increase as new technological developments broaden market outlets for cotton textiles. The largest domestic outlets for this mill waste are the bedding, automotive, furniture, and paper industries. The increasing use of cotton-synthetic fiber blends by U.S. cotton mills has resulted in mill waste which contains varying mixtures of synthetic waste. These mixtures have created problems for users requiring pure cotton waste in the manufacturing of their products. If the use of spinnable cotton waste continues to rise in mills and supplies of lower quality soft waste continue to decline, users of cotton mill waste may turn to cotton gin motes and some classes of synthetic fiber waste to meet their needs.

A comprehensive study of cotton merchandising costs in 1964-65 done in cooperation with Texas A&M University and the University of Texas found that total merchandising costs to all outlets averaged \$17.14 per bale of cotton. U.S. cotton shippers averaged \$13.56 per bale for merchandising costs to all domestic outlets. This compares with \$13.40 per bale in 1954-55. Total merchandising cost to foreign markets averaged \$23.24 per bale. No earlier comparable foreign market costs were available.

An earlier study of the cost of handling and storing of cotton was updated for the Agricultural Stabilization and Conservation Service. Total storage costs reflecting projected volumes and price levels for 1967-68 averaged \$4.46 per bale (\$0.37 per month) for all plants. Average out-of-pocket storage cost averaged \$3.12 per bale (\$0.26 per month). The long-run competitive storage rate estimated for those facilities that are necessary to store the projected 1967-68 volume (based on the total average cost of the marginal firm at 85 percent of capacity) averaged \$3.76 per year (\$0.31 per month). The short-run competitive rate based on out-of-pocket storage costs for the marginal firm averaged \$3.02 (\$0.25 per month) for the Cotton Belt.

Cotton gins in most of the major producing areas are becoming fewer in number but larger in size. This trend has been brought about largely by the general adoption of mechanical harvesting and increased use of chemical defoliants which have greatly shortened the harvesting period. Ginning costs are affected by these changes. In cooperation with the Consumer and Marketing Service, a report prepared annually of charges for ginning cotton showed ginning charges averaged \$18.25 for the 1966-67 season--\$1 per bale higher than for the 1965-66 season. Ginning charges, by States, varied from \$20.78 per bale in Arizona to \$13.25 in Virginia. A comprehensive study of ginning costs is underway in the High Plains area of West Texas. One part of this study will evaluate the feasibility of developing the annual ginning charges report from information which might be supplied periodically by mail from gin operations.

A study of cotton ginning costs and efficiency has been completed for the Midsouth and West. Synthesized models provide economic information on the effects of size of operation on ginning costs. Findings indicate that unit costs of ginning cotton decreased as plant size increased up to about 24 bales per hour. Total cost per bale ranged from \$10.21 for the smallest plant to \$10.61 for the largest.

Rice

A survey of distribution patterns for the domestic marketing of American rice is being initiated. The rice industry has requested an updating of earlier studies of the rice industry structure, practices, and marketing channels. This research will assist the industry in its efforts to expand the market for rice.

Mixed Feed

A comprehensive economic-engineering analysis of feed mill operations has been completed. Total costs for manufacturing mixed feeds ranged from \$7.13 per ton for the 80-ton operation to \$3.04 per ton for the 300-ton operation per 8-hour day. Lowest costs were found in plants which did not pellet or package feed. Operating cost for manufacturing mixed feeds was estimated to be about 20 percent less for plants which operated 16 hours per day than for plants which operated only 8 hours per day.

Fruits and Vegetables

Results of capacity analyses in the Southern Region show that vegetable canners and freezers utilized 57 and 73 percent of their processing capacity respectively when capacity was calculated under usual operating conditions for each plant. This leaves a surplus capacity for vegetables of 25 million 24/303 case equivalents in canning plants and 73 million pounds in freezing plants.

Input-output coefficients and input costs have been compiled for freezing and canning 11 vegetables that are important to processors in the South.

Work on input-output coefficients and input costs for grading, packing, and storage of the major fresh vegetables produced in the South is to be completed. Planning curves for the various vegetable processing lines are to be developed from the input-output and cost data.

Peanuts

A study of the costs of handling and storing farmers' stock peanuts, initiated at the request of ASCS, was completed during fiscal 1967. The results of this study are presented in the publication ERS-352, Costs of Storing and Handling Farmers' Stock Peanuts in Commercial Facilities, 1965-66. Costs were developed for four primary services performed as a part of peanut handling and storage: cleaning and drying, receiving, loading out, and storage. Standardized costs for handling averaged \$2.10 per ton for receiving, and \$1.26 for load-out. Standardized storage costs per ton-month stored ranged from \$0.51 for Virginia-North Carolina shellers to \$1.46 for Virginia-North Carolina warehouses. Cleaning and drying costs ranged from \$0.17 per ton received for Virginia-North Carolina shellers to \$4.06 for Southeast warehouses. The low cleaning and drying cost for Virginia-North Carolina shellers is due to the small percentage of receipts cleaned and dried by this group of plants.

Transportation

Analyses of records obtained by the 1963 Census of Transportation revealed that the exempt trucking industry was considerably smaller in terms of number of firms than had been assumed. The number was found to be only 11 thousand firms

as contrasted to an estimate of more than 37 thousand in 1960. However, exempt carriers had operating ratios of 91 as contrasted to 94 for Class III regulated carriers. Thus, the number of exempt carriers should be expected to increase more rapidly than the number of Class III carriers.

Research was undertaken to determine if it is feasible to estimate traffic distribution from secondary data on freight rates, distance of shipment, and other factors. Special tabulations of the Census of Transportation Commodity Survey are being analyzed through discriminant functions analyses. Preliminary results indicate that discrimination among modes on the basis of the independent variables of rail rates, truck costs, and distance only is reasonably good.

Bakery Operations

A study of bakery plants which had installed the continuous mix process between 1956 and 1961 showed that the plants installing the continuous mix process increased their total crude value added by 27 percent as compared to an average of 2.8 percent for the total industry. The number of production workers increased by 4 percent in such equipped plants. This compared with average decrease of 0.8 percent for the baking industry as a whole. The difference in numbers of workers and plants in the industry is explained by multi-establishment companies which eliminated their most inefficient establishments, and supplied their needs from their newly equipped continuous mix plants, and by elimination of single establishment firms too small to install the new process.

Comparisons of states with and states without continuous mix establishments (1956-64) showed that in states with continuous mix plants there was an 18 1/2 percent drop in establishment numbers, and a 13.4 percent drop in the total number of employees. In states without such plants the number of establishments dropped 2.7 percent and the total number of employees by 6.2 percent. In states with continuous mix plants the impact reported by counties with and without such plants was about the same. This result is consistent with each plant's capability of shipping from plants in continuous mix counties to markets in counties which do not have continuous mix plants.

Measures of Market Performance

As an initial step in improving and strengthening research in market performance, a task force developed a position paper setting forth broad guidelines for market performance research giving particular attention to developing a conceptual framework for problem definition, the establishment of norms, and outlining the relevant variables to be measured. This paper was critically evaluated at a Departmental seminar which benefited from participation by outside consulting experts.

Research to improve the collection, analysis, and reporting of market performance statistics has been initiated. A critical review is being made of retail

price spreads, the marketing bill and related series with the view of determining what changes need to be made to make these series more meaningful and useful. New procedures are being developed and evaluated for estimating the average level of retail and wholesale prices, including the effects of retail specials and wholesale discounts.

In an attempt to arrive at a more accurate estimate of the marketing bill, an alternative method of computing the bill was developed. This new concept, the product flow method, presents estimates of the marketing bill broken down by changes made by processors, wholesalers, retailers, public eating places and transportation. This method of computing the bill is more accurate and provides more perceptive insights into the nature of marketing costs.

Input-output methods are being used to analyze changes in productivity in the food marketing subsystem to increase understanding of the nature of marketing costs and their interrelationships with other segments of the economy. During the past year, a model has been formulated and the general methods to be followed have been outlined. Various input-output matrices for 1958 have been computed from data published by the Office of Business Economics. Total labor requirements (direct and indirect) for 1958 have been computed from these matrices, together with other data obtained from the Bureau of Labor Statistics. Input-output matrices for 1939 have been computed; estimates of total labor requirements have not yet been completed. Estimates of requirements in 1939 and 1947 will be made in the next few months. These estimates of labor required, together with estimates of the gross output will complete the data needs for computing productivity.

In a report developed for the Senate Committee on Agriculture and Forestry, an analysis was made of food prices and marketing costs in 1966. Highlights of this report were: (1) Retail food prices in 1966 were nearly 5 percent higher than in 1965--far more than the average annual increase of 1 to 1 1/2 percent in recent years. The Consumer Price Index shows that in 1966, for the first time in 8 years, the index of food prices is higher than the index of all items. However, prices for services are still much higher than food prices. (2) In 1966 farm prices of food products rose above the 1947-49 levels for the first time since 1952. Between 1947-49 and 1966, farm prices were usually under the 1947-49 level and nearly all of the increase in retail food costs has resulted from increased marketing costs (farm-retail spread). The 1966 increase in farm prices accounted for only three-fifths of the rise in retail food prices during the year. Strong demand and lower supplies for some commodities contributed to the rise in farm prices in 1966.

In a report to the Subcommittee of the Committee on Appropriations of The House of Representatives, an analysis was made of developments in marketing spreads for agricultural products in 1966. This report focused on changes in marketing costs and the underlying forces accounting for these changes. Highlights of the report showed that the marketing bill increased 6 percent over the previous year. Marketing charges amounted to twice the farm value. About two-thirds of the rise in 1966 was attributable to rising marketing costs per unit of product handled, while the rest of the rise was due to continued growth in the volume of products moving through the system. Prices of most marketing

inputs increased in 1966, keeping pressure on the marketing system to find ways of increasing efficiency and reducing costs. Marketing firms have partially offset rising cost levels through improvements in output per man-hour. Thus, even though average hourly labor costs were up 39 percent over the 1957-59 base period, unit labor costs increased only 12 percent.

In addition to these reports, several articles relating to current developments in marketing and discussing various aspects of performance were published in the periodic publication, The Marketing and Transportation Situation.

Recognizing, of course, that effective public policy requires not only knowledge of the past and present, but also of the future; projections are being made of marketing costs and related statistics for some time in the future.

Estimates are being made for 1967-72 and 1980 for the market basket, marketing bill and other statistics related to the marketing of farm food products. These are to be used by ERS and other agencies to show the future effects of various farm programs on farmers, consumers, marketing firms, and others.

Regression equations have been developed for the purpose of estimating the various statistics. Preliminary estimates of the farm retail spreads and the total marketing bill have been made. Estimates of other statistics will be made as soon as data from other agencies become available. The farm-retail spread for the market basket of farm foods is expected to increase about 20 percent by 1980 over the 1967 average. This is about in line with expected increases in prices throughout the economy. The increase in the spread, together with an increase in population and added marketing services, will boost the total expenditure for all marketing services by about 45 percent. Marketing services per unit of product marketed probably will rise about 5 percent between 1967 and 1980.

The Away-From-Home Market for Food

More than 200 commodity groups, associations, and individual firms have contributed in excess of \$200,000 toward a joint government-industry survey of the restaurant and institutional food service market. Phase I of this two-part study has been completed. It provides a profile of the industry and information on physical and economic characteristics of establishments which comprise it. Projected estimates indicate that food service is available in 371 thousand establishments. Nearly 3.3 million persons man these outlets in which more than 100 million individual consumer transactions take place daily. The annual retail value of food and nonalcoholic beverages served is approximately \$22 billion. These figures do not include estimates for the military services, elementary and secondary schools, in-transit food services, correctional institutions, and Federal hospitals which were not surveyed. Examples of other data collected in Phase I include information relating to the establishment's location, size, customers, menu specialty, years in operation, ownership, food procurement practices, and methods of ordering; and information on the frequency of deliveries, types of food service equipment, and nonfood supplies.

Data collection for Phase II began in October 1967 and continues for one year. During this part of the study, detailed product information will be gathered on the quantities of food received by form (fresh, frozen, canned, etc.) and by unit container type, size, and money value.

B. Competitive Situation of Input and Output Marketing Firms

Research in this area is concerned with the organizational characteristics and practices of marketing firms which effect competition among firms and their relative bargaining position as both buyers and sellers. Studies relate to the measurement and evaluation of concentration, mergers and the various dimensions of integration and diversification of firms. These factors assist in evaluating the marketing position or power of the intermediary marketing agencies. Information on profit ratios and descriptive statistics relating to the farm-retail price spreads and the Marketing Bill serve as bench mark indicators of market position and power.

Livestock

During 1961-64, the number of federally-inspected meat processing firms increased from 1155 to 1322, as 103 firms exited from and 270 firms entered the industry. Entry of meat processing firms was most rapid in the densely populated regions of the United States. While firm numbers grew, average volume also increased, by nearly 1 million pounds. But specialization in meat processing remained about the same--64 percent of federally-inspected processing plants did not slaughter livestock. As size and numbers grew, there was a slight decline in concentration of federally-inspected meat processing in large firms. The four largest firms did 35 percent of federally-inspected processing in 1961 and 31 percent in 1964. This reflects the changing size structure of the industry. Firms which entered had a larger average size, but smaller variation in size, than firms which exited. Persisting firms tended to grow in size and became more equal in size during the period, chiefly because small firms tended to grow faster than large firms.

Patterns of change in size structure of the federally-inspected slaughter industry during 1950-62, documented in previous reports, parallel those of the processing industry in 1961-64. Concentration declined, average size increased, and variation in size decreased. On the average, small federally-inspected slaughter firms grew 4 times faster than large firms. However, growth characteristics vary markedly among firms slaughtering different livestock species. It is hypothesized that observed growth patterns are due chiefly to: (a) the pattern of scale economies in livestock slaughter, (b) different investment alternatives between large and small firms, and (c) different patterns of plant location between large and small firms.

Poultry and Eggs

Producer groups and others have become increasingly concerned about the accuracy and usefulness of the present base price quotation system and possible alternatives for eggs. It is difficult to predict short-run variations in egg prices with formal models. In part, this stems from a lack of short-run market information series on movements, holdings, supply, indicated supply trends, and demand. Available information is from many reports and is not consolidated. However, many price changes appear due to psychological elements and expectations that prices "ought" to rise or fall at certain times as they have historically, rather than actual changes in supply and demand. With much of the country tied to the New York base price quotation and to reflections of trading on the New York Mercantile Exchange, price fluctuations may be too frequent and "the market" seems to frequently over-react. The New York base price quotation principally reflects the local wholesale supply and demand situation as expressed through trading on the Mercantile Exchange while frequently the New York situation is not indicative of the supply-demand relationship of the remainder of the country. Also, the quality of eggs traded on the Mercantile Exchange is inferior to consumer grades of cartoned eggs.

For 1961-66, the producers of large Grade A eggs received the highest average share of the retail price, 58 percent compared to 57 percent for turkey producers and for poultry products--50 percent for broilers. As with retail price, farm-equivalent value of poultry products varied from year to year. Farm-to-retail price spreads in the 12 cities varied from city to city but averaged 23 cents per dozen for Grade A large eggs, 20 cents a pound for Grade A frying chickens, and 21 cents a pound for Grade A medium size turkeys from 1961 to 1966.

Dairy

Milk processors, especially small and medium-sized independents, have been much affected by changes in their competitive environment. They are acutely aware of the effect of the greatly increased market power of the food chains upon their competitive position. Many processors, particularly, but not exclusively small volume operators, are leaving the industry. The extent of the adjustments made by processors who are continuing in business varies widely. Most independents whose businesses appear to be in good condition have modified their operations, attempting to adapt them to the changing competitive situation. Most small operators who continue in business distribute milk principally on home-delivery routes or else through specialized dairy stores.

The farm-retail spreads for butter account for the lowest percentage of the retail prices of dairy products, and those for ice cream the highest; the other three products are closely grouped in the middle range. A comparison of the average farm-retail price spreads for the entire group of dairy products with farm prices of milk since World War II shows that more efficiency has been gained in the production of milk than in its marketing. Dairy farmers produce more milk at a lower price as a result of mechanization, larger herds, and increased

output per cow. The average farm-retail spread--which is the price for performing the marketing functions of processing, transportation, storage, and distribution--has widened. The wider spreads indicate that the more efficient methods which have been adopted have not been sufficient to offset higher costs.

A spatial equilibrium model is a useful device for analyzing the geographic alignment of Class I prices in all Federal order markets. Order prices in 1965 were lower than the equilibrium prices in the upper midwest and higher in the northeastern markets, Florida, the south central area, and in Western Iowa, Nebraska, and South Dakota, for one model.

Bakery Products

A revised approach for developing information on price spreads for marketing white bread has been completed and a report prepared for publication. An upward trend has prevailed since 1947-49 in farm-retail price spreads for a 1-pound loaf of bread marketed through retail stores. The rate of increase in bread prices has more than doubled the rate for all foods purchased for home consumption. The increases in prices correspond closely with the increases in marketing spreads. The farm value of ingredients used in making bread has declined and only recently has exceeded the 1947-49 level. The increased marketing spread for bread has largely been a reflection of higher operating costs--particularly in the selling and distribution functions. In 1966, consumers paid an average price of 22.2 cents for a 1-pound loaf of bread. The increase was 1.3 cents a loaf alone in 1965. This increase was exceeded in 1951 when the price increase was 1.4 cents per loaf over 1950. Contrary to the long-term trend, retail prices for bread in the first two quarters of 1967 averaged slightly lower than for the fourth quarter of 1966.

Soybean and Cottonseed Oils

A study of marketing spreads for soybean and cottonseed oils used in salad dressing has been completed. The price spread between the farm value of oils in a pint of salad dressing and the prices consumers pay has widened during the past two decades. Most of the increase in margins resulted from increased costs of marketing services. Striking differences in retail prices were found between advertised and unadvertised brands of salad dressing. These retail prices varied also by type of retail outlet. A similar study of marketing spreads for vegetable shortening and cooking oils has been initiated.

Fruits and Vegetables

Of particular significance among the fruit crops in the 1966-67 season was the record large production of Florida oranges. As a result, the average retail price for fresh Florida oranges in 4 markets of record was \$9.00 per 90 pound box compared with \$10.21 the previous season. Despite this price decrease, the wholesale-retail price spread increased 10 cents to \$4.59. In contrast, the

shipping point-wholesale price spread decreased from \$2.15 in 1965-66 to \$1.44 in 1966-67. The amount received by the grower and packer was \$2.97 per box in 1966-67 compared with \$3.57 a year earlier.

Potato prices in 1966-67 moved upward from a year earlier although they did not reach the high levels of 1964-65. Western russets averaged \$10.76 per 100 pounds at retail in 4 markets, which was nearly \$1.00 above the previous season. Of this increase, 41 cents went to the wholesale-retail spread, 17 cents to the shipping point-wholesale spread and the remaining 41 cents to grower and packer returns.

Round white potatoes, primarily from Maine, averaged \$7.49 per 100 pounds at retail in 3 markets of record compared with \$6.88 a season earlier. Most of the increase--62 cents--went to the wholesale-retail spread bringing it to \$4.34. The shipping point-wholesale spread decreased from 76 cents to 68 cents. Grower and packer returns increased from \$2.40 in 1965-66 to \$2.47 in 1966-67.

The opening of a new wholesale produce market as part of a Food Distribution Center in 1959 resulted in greater centralization of produce wholesaling in Philadelphia. About half of the produce wholesalers in Philadelphia, handling two-thirds of the total volume (including resales) were located in the Center in 1964. These firms accounted for three-fourths of the produce entering the city that year. In 1958, before the new market was opened, about 60 percent of all wholesalers were located in the Dock Street area. These firms accounted for about one-half the total volume in 1958, but only one-third of the produce arriving in the city.

In 1964, there were 154 wholesalers in the Philadelphia market--58 fewer than in 1958. Most of the decline was among small firms handling less than 3,000 tons per year.

Although the volume of fresh produce entering the Philadelphia market increased 7 percent between 1958 and 1964, wholesalers' share of the market declined. Direct receipts by chainstores increased from 33 percent of all market receipts in 1958 to 42 percent in 1964. Chainstores were buying a greatly reduced proportion of their produce needs locally--33 percent in 1958 and 18 percent in 1964.

Ornamentals

Nearly 67,000 acres were used for the production of woody ornamentals in 11 Southern States in 1965. Sales from this production were estimated to be nearly \$44 million. The woody ornamental nursery industry is typified by a large number of small units. In the 11 states surveyed, only 17 percent of the nurseries accounted for more than 70 percent of the total sales. Broad leaf evergreens were the most popular item produced. Eighty-four percent of the nurseries produced broad leafs, compared with 69 percent producing narrow

leaf, 61 percent producing deciduous shrubs, 63 percent ornamental trees, and only 20 percent producing vines.

Tobacco

A study which began for ASCS in July 1967 to determine cost of handling, processing and storing tobacco is well underway. Costs to be determined are: (1) Handling from warehouse auction floor to processing plant; (2) processing tobacco through stemming and redrying, including packing into storage containers and delivering to storage warehouses; and (3) storing and services incidental to storage operations, including sampling and reweighing of tobacco and additional packaging requirements necessary for all types of shipment.

Sugar

Since 1956 marketings of beet sugar have increased in volume more rapidly than total sugar marketings. This has increased the average cost of marketing a pound of beet sugar, primarily because of increased transportation costs. Since the price growers receive for sugar beets is largely dependent on the net returns (price minus marketing expenses) processors receive for their sugar, prices for sugar beets have not risen as much in recent years as have prices for refined cane sugar in New York. An increase of 1 percent in the share beet sugar constitutes of total United States sugar supplies is associated with an average decline of 0.14 cent per pound in the amount by which sugar beet processors net returns were below refined sugar prices in New York. This is equivalent to about 26 cents per ton of sugar beets.

Sugar's share of the market for the major sweeteners--sugar, corn sweeteners and noncaloric sweeteners--has declined from about 87 percent of the total in 1957 to 81 percent in 1965. The growth of nonsugar sweeteners has been especially important in food industries manufacturing ice cream, soft drinks and canned fruit. Further increases in the use of nonsugar sweeteners appear likely.

A study of the position of noncaloric sweeteners in the sweetener industry shows that about two-thirds of the sales of soft drinks manufactured with noncaloric sweeteners in the United States represented additional sales and only one-third were used as a substitute for sugar-sweetened soft drinks. The extent of substitution probably was somewhat less in most other uses.

Transportation

Freight car supplies are allocated among traffic originating points by a pricing system. Prior to 1964, this pricing system was a flat per diem rate per car regardless of the cost of the car and its value in use to a railroad. A graduated per diem rate was initiated in 1964. Since ownership of cars is unevenly distributed among railroads of the United States, with those roads in areas originating much more traffic than is terminated owning a large

proportion of all cars, short-term changes in demand for rail cars appear to result in considerable redistribution of freight cars among regions. Grain and lumber originating areas appear to have suffered considerably from the car shortages occurring in the mid-1960's as a result of: (1) the inadequacy of the per diem rates in effect prior to 1964 to keep the total car supply at reasonable levels; (2) the lack of incentive in the per diem pricing scheme to upgrade the quality of the car fleet; and (3) the greatly increased demand for freight cars resulting from decreased rail freight rates and increased economic activity.

As shown by the chart in the introduction, ocean freight rates tend to vary simultaneously among trades. Research has been undertaken to construct ocean freight rate indexes for heavy grains, but considerable variability in volumes among trades makes a fixed-quantity type of index not very descriptive of actual costs of ocean transportation to U.S. exporters. Such variability in volume among trades probably is a complex function of numerous factors--domestic freight rate changes, weather in grain producing areas both in the U.S. and abroad, decisions regarding outlets for government-sponsored shipments, etc. Research to develop an ocean freight rate index will continue, as will research to develop an index of exempt truck freight rates for domestic movement of all unmanufactured agricultural products.

Industry Concentration

Recent reports documenting high levels of concentration and diversification within food and kindred products industries have raised questions concerning the relationship between concentration and diversification and firm and industry performance. An intensive study of 134 medium and large-sized publicly owned food processing firms found that industry concentration exerted little influence upon profitability, when profitability was measured by the ratio of profits to net worth. In fact, a higher association between concentration in a firm's primary industry and the average gross margin was found than between concentration and the ratio of profits to net worth.

The farmer's share of the consumer dollar is a price variable, quantity fixed, indicator of change. Data from the Internal Revenue Service, the Bureau of Labor Statistics, and the Department of Commerce, enabled the computation of a price-fixed, quantity-variable indicator of changes of revenue flow to agriculture and to other basic inputs. Preliminary comparisons showed that while the total revenue flow increased for all inputs, the flow to agriculture did not maintain its proportionate share of total flow between the years 1947 and 1963.

Factor Inputs

Preliminary results of the Pesticide and General Farm Survey document today's heavy reliance on custom feed mixing by dairy, poultry, and hog producers. Far more farmers reported purchases of supplements and grain than complete formula

feeds of 24 percent or less protein. Of the farmers reporting purchases of complete formula feeds (24 percent or less protein), a substantial number reported purchases of local and regional brands, in contrast to national brands. Comparisons of the relative quantities of purchase of local and national brands await the completion of tabulations.

Market Basket

Current data on the cost of a market-basket for food, the bill for marketing agricultural products and related series such as profits of marketing firms and productivity of labor in processing and distribution have been maintained on a continuing basis and published periodically. Some of the principal changes in these indicators of marketing change and performance are presented below.

Retail prices of foods originating on American farms turned upward in June after declining since August 1966. In the first 8 months of 1967, the retail cost of a market basket of farm foods averaged 1 percent lower than in the like period of 1966. The lower level of prices in 1967 resulted entirely from decreases in prices farmers received for these products, as spreads between retail prices and farm values (returns to farmers) increased. During the first 8 months of 1967 the farm value of the market basket of farm food averaged 7 percent lower than a year earlier, while the farm-retail spread averaged 3 percent wider. The retail spread increased at an average rate of 2 percent (compounded) from 1956 to 1966.

Both retail and farm values were down this year for many of the product groups in the market basket. However, farm values decreased more than retail costs. As a result, farm-retail spreads increased for all product groups except poultry.

Increases in farm-retail spreads for food products in 1967 were accompanied by rises in average hourly earnings of employees and increases in prices of goods and services used by marketing firms. In July, hourly earnings of employees in food marketing establishments averaged 5 percent higher than in the same month of 1966. This increase compares with an average annual increase of 4 percent during 1956-66. Prices of containers, packaging materials, fuel, and other goods and services averaged 4 percent higher in the second quarter 1967 than a year earlier. The effect on marketing firms' costs of the rise in hourly earnings probably was partly offset by increases in output per man-hour, as in earlier years. Hourly costs of labor (including costs of fringe benefits) averaged 39 percent higher in 1966 than in 1957-59, but improvements in productivity held the increase in labor costs per unit of product marketed to 14 percent.

Faced with rising operating costs, marketing firms allowed their spreads to widen instead of decreasing wholesale and retail prices as much as farm prices decreased.

Profits (after taxes) of 8 leading retail food chain corporations averaged 0.9 percent of sales in the first half of 1967 compared with 1.2 percent in the first half of 1966. Profits (after taxes) of corporations manufacturing food products averaged 2.2 percent of sales in the first quarter this year compared with 2.5 percent in the same period last year.

Marketing Bill

The bill for marketing farm-originated food products to U.S. civilian consumers totaled \$55.3 billion last year--6 percent more than in 1965. This increase compares with an average annual increase of 4 percent during 1956-65. Rising unit marketing charges accounted for most of the growth in the marketing bill from 1965 to 1966. Part of the rise in the average unit marketing charge resulted from an increase in marketing services per unit of product--especially in the form of food served away from home. Expansion in the volume of products marketed also accounted for part of the increase in the marketing bill. Civilian consumers spent \$83.4 billion for farm foods last year--7 percent more than in 1965. Returns to farmers from these foods amounted to \$28.1 billion--10 percent more than in 1965.

Costs of labor made up 42 percent of the marketing bill last year compared with 43 percent in 1965 and in 1957-59. Corporate profits after taxes accounted for 2.9 percent last year and in 1965, and 2.3 percent in 1957-59.

Efforts are being made continually to improve the accuracy of farm-retail spreads, the marketing bill, the market basket series, and related statistics. Special effort is being made to identify and quantify components of the marketing bill such as packaging and advertising for which sufficient information has not been available in the past to provide reliable estimates.

Pricing

Retail food prices collected by the Bureau of Labor Statistics are used to compute the retail cost of a market basket of farm-originated foods. The farm value of an equivalent quantity of these foods is subtracted from the retail cost to derive the farm-retail spread. Industry groups as well as the National Commission on Food Marketing have suggested that BLS prices do not give sufficient weight to weekend prices, thus, the farm-retail spread is overstated. To examine the representativeness of BLS food prices, a contract was executed with BLS to conduct a special study of weekend prices for selected beef, pork, poultry, and bread items. The study was repeated 5 times from May 1966 through May 1967. Preliminary findings from the first four periods studied indicate that U.S. average end-of-week prices were slightly lower than first-of-week prices for almost all items studied. Differences between prices weighted according to regular BLS methods and prices weighted by giving additional weight to end-of-week sales volume were relatively small for the U.S. average prices. However, differences were greater among the 12 cities studied. These preliminary results indicate that the farm-retail

spreads in the current market basket series are not significantly overstated or overstated to the extent suggested by industry groups or NCFM.

C. Bargaining and Income Position of Farmers in Marketing

It has long been assumed that, because of the purely competitive structure of the production process in agriculture, farmers are at a disadvantage in the marketing process. Consequently, considerable public enabling legislature has been enacted to strengthen the bargaining and income position of farmers. Examples are the establishment of publicly financed market news, crop reporting and estimating, and legislation to enable farmers to band together in their buying and selling activities. Farmers also engage in self-sponsored programs such as advertising to differentiate their products in the market place. Continuing research is designed to evaluate the effectiveness of these programs and to seek alternative ways in which farmers can organize to strengthen their market and income position.

Poultry and Eggs

Grower returns for poultry and eggs under various types of production contracts are affected by input prices, production efficiency, and market prices for the individual commodities. Through various ranges of commodity prices, input prices and production efficiency, the advantages of a contract for a grower may change relative to other contracts. Contract provisions often are not clearly defined with some problems of interpretation arising.

Wool

A study is underway which evaluates the effectiveness of the domestic marketing system for shorn grease wool. Included in these analyses are wool growers' evaluations of local pools, warehousing, and processing. Findings indicate that wool growers generally are satisfied with the wool marketing agencies with which they deal. Many local wool pools have not taken full advantage of their unique position in the wool marketing system and are in need of improvement. In addition, some wool warehousing and procurement operations have not kept pace by adopting some new methods and practices. Most wool processors recognize the poor preparation and inefficient marketing practices of many local pools in the Southeast and do not purchase wool from them. This research was requested by and is being conducted in cooperation with the National Wool Marketing Corporation and the American Farm Bureau Federation.

Tobacco

Changing requirements for tobaccos in the manufacture of cigarettes, due to changes in the types of cigarettes produced and to technological advances in

the manufacture of cigarettes, have resulted in a growing disparity between the Federal and commercial grading systems for tobacco. A mathematical simulation model of the cigarette manufacturing industry, designed to relate tobacco strip specifications for specific cigarette blends to leaf tobacco grades, and to indicate the commercial value of specific grades of leaf tobacco is under development. Work on this model has not yet reached the preliminary testing stage.

Grades and Standards

Research to determine consumer awareness of grades and standards has been initiated. This work is being done at the request of the Consumer and Marketing Service. The study is designed to measure the extent to which consumers are aware of grades for certain products at the retail level, the extent to which grades are used in making purchase decisions, and the confusion which may prevail in grade terminology. A basic need for this information is for evaluating whether consumer preferences are reflected backward in meaningful terms to farmers.

Promotion Evaluation

Analyses of published reports issued by the Department, State Experiment Stations, and other agencies on the subject of advertising and promotion are being made and interpreted from the viewpoint of economic implication to agriculture and development of general principles that will have widespread application. These analyses are nearing completion. Tentative conclusions indicate a number of problems of a technical nature in planning and conducting promotional activities which affect the economic consequences of such activities. Tentative principles include: (1) The chief role of advertising and promotion is communicating product information and attracting the attention of consumers. Advertising and promotion are competitive devices substituting for personal selling which must be carefully coordinated with other activities in the marketing system, (2) promotional activities should be directed toward carefully selected market targets for maximum effectiveness, and (3) sales response to promotional activities for agricultural products is related to the elasticity of demand of the product being promoted.

A comprehensive study is being initiated to determine the proportion of campaigns in which tradesmen participate, when their cooperation is sought, and factors which affect the level of participation. A pilot study to develop information for planning the comprehensive study conducted in cooperation with the Maine Potato Commission has been completed. Principal findings indicated a low level of cooperation with the Commission and most materials used in the in-store promotion of potatoes were produced by the stores themselves rather than by potato promotion groups. Promotion of potatoes by specific growing areas in different markets was related to primary sources of supply.

The study on sales and consumer response to varying levels of promotional investments for fluid milk has been completed. Findings not previously reported include: Percentage of consumers who could recall the advertising and remember the themes was positively related to the level of advertising, however, proportionally, the number of respondents who recalled the advertising themes did not match the increase in expenditures. Results indicated for a given advertising approach, the saturation level of effective exposure is considerably short of total market coverage. Thus, some knowledge of the saturation level associated with a particular promotional program is needed for the most effective allocation of expenditures. Awareness of the advertising and related promotion was correlated to sales increase, but it was not a 1 to 1 relationship. An approximate increase of 35 percent in awareness was necessary to achieve a 4.5 percent sales increase. It was concluded from an analysis of the consumer recall data that its greatest value was to provide a profile of the consumers involved which might be useful in determining whether the advertising is reaching the desired market targets.

Exploratory work is being initiated to develop a series of data necessary to analyze the influence of advertising expenditures on the aggregate demand for farm products. It is anticipated that such analyses will also provide quantitative measures of such relationships as advertising expenditures to total selling or marketing costs and returns to producers.

D. Role of Consumers in Marketing

Research in marketing economics concerns itself with the interests of the consumer as well as those of the farmer and marketing agencies. Research in this area is designed to facilitate the communication of consumers' wants and desires back through the marketing system to the production process. Research is designed to evaluate the nature of demands so that resources can be more efficiently allocated in the production process.

Livestock

The unhairing of uncured hides at packing plants eliminates curing, reduces transportation costs and results in better quality leather. Total savings on raw material costs to tanners are about 15 percent. The segmenting of bellies, heads and shoulders from hides prior to tanning creates product differentiation, improves quality and results in greater net returns to all segments of the hide and leather industry. Heads, trimmings and unwanted or low value portions of a hide yield a greater net return to the packer when they are converted into a high protein feed than when used for leather.

Poultry and Eggs

Further processing offers the prospect of expanding total usage of poultry meat. Expansion of production should be gradual, in line with needs, and not regarded as likely to easily replace more traditional product forms. The degree of concentration is already high in the further-processed products industry except on specialty items. Substantial economies of scale exist in producing further-processed products. This will eventually result in a downward trend in plant numbers. Marketing costs are important in relation to production costs and the competitive environment relatively imperfect. Many plants will be located close to markets designed to serve the institutional trade or exploit local preferences. On the other hand, large volume mass-market items can be more efficiently produced close to major poultry producing areas. Further-processed egg products can be a feasible enterprise in the South provided certain conditions as to location, volume, size of plant, and other requirements are met. A crucial factor will be the nature and degree of product mix. Small seasonal operations producing only whole eggs will be unprofitable under most conditions.

Dairy

Significant percentages of raw food costs in selected samples of 9 types of institutions are represented by fluid and dry milk products. Depending on the type of institution, the amount spent for fluid milk ranged between 6 and 22 percent of the year's total food expenditures. Purchases of evaporated, dry, and nonfat milk averaged 0.2 percent or less of the total food cost. Research involving 51 Midwestern and Eastern institutions indicate sterilized milk concentrate would have a favorable acceptance by institutional outlets. The major disadvantage of the product pertains to problems involved in reconstituting and serving milk concentrate as a beverage. Main advantages indicated were long shelf life, savings in refrigeration space, a more convenient and superior product over powdered milk, and the multiple use of sterilized milk concentrate.

Bakery Products

An evaluation of the market potential for frozen dough in the United States showed that major industry growth occurred between 1962 and 1965. An important factor in this growth was the lower retail price for frozen dough. The future growth of the frozen dough industry will be influenced by the solution of technical problems such as improvement in yeast characteristics, increased shelf life, and reduction in preparation time.

A study to assess wheat quality factors and their effect on milling and baking qualities is being initiated in cooperation with Kansas State University. This research will evaluate current criteria for grades and also will develop and evaluate new criteria of milling and baking qualities of wheat. Tests will be made for establishing the relationship between quality factors in wheat and

milling and baking qualities. These tests will aid in developing factors useful in forecasting the baking qualities of different varieties of wheat.

Safflower Oil

A study is underway of the market potential for safflower oil and meal for industrial, feed, and food use. Particular attention is being given to analyses of use patterns and factors associated with the use or lack of use of safflower. The study is designed to estimate the demand for safflower oil and meal in 1970 and to evaluate factors affecting its use. It also will assist the Western Utilization Research and Development Division, ARS, in establishing priorities and in developing plans for their research on safflower.

Mohair

The Mohair Council of America has been given assistance in developing specifications for research which would be carried out under contract with a private firm. This research would be financed by the Council. It would evaluate the effect of changes in the structure and practices in marketing mohair on the demand for mohair. This study will assist the Mohair Council in identifying factors affecting the future demand for mohair and will evaluate the price competition existing in the mohair market from warehouses to fabricators. This research also will aid the Mohair Council in developing its promotion and advertising program.

Cotton

A contract has been initiated with a commercial research firm for the development of a quantitative research method for estimating the future demand for a new or improved product. This econometric approach seeks to develop a new and useful method of estimating the demand for selected cotton products such as broadcloth. This analytical approach will utilize the effect of certain selected characteristics of a product on the final demand for a commodity. If this approach is successful it should provide a more effective method of estimating the future demand for a commodity or a new product.

A continuing phase of research involved close cooperation with the Regional Utilization Research and Development Divisions of ARS in evaluating and testing new and/or improved cotton, grain, and oilseed products and their substitutes. These analyses will be useful to the Utilization Divisions in establishing research priorities and in the allocation of research funds. One outgrowth of this research program is continuing counsel with some firms in their decisions relating to their research and product development programs.

Fruits and Vegetables

Research conducted in cooperation with the Florida Citrus Commission and the Market Research Corporation of America indicates that purchases of juices and fruit drinks by household consumers in January-March 1967 were up 5 percent--3.5 million cases single strength equivalent--in comparison with the same quarter of 1966. Orange juices accounted for about 44 percent of the fruit beverages bought for home use during the quarter, up from 40 percent a year earlier.

Coffee

Recent research conducted in cooperation with the University of Hawaii indicates there is a rather large additional market for Kona coffee in the Hawaiian restaurant trade and among consumers. This market could be further enhanced by the production and promotion of a soluble Kona coffee that would be sold as a gourmet item.

Flowers

A current study to determine the attributes of consumers (and nonconsumers) of flowers, plants, seeds, and ornamentals indicates that approximately 60 percent of the purchases of flowers and potted plants are made in florist shops. Independent garden centers, and garden centers affiliated with department stores each make 12 percent of the number of sales. Six percent of the purchases are made in supermarkets.

Most purchases of flowers (21 percent) are made for the home. Funerals comprise 18 percent and gardens 17 percent of flower purchases. Most of the purchases are made by women.

Product Development and Utilization Research

Results of past research conducted in the areas of utilization, product development, market potentials, and market development suggest certain types of impacts of new technology on the interdependence between raw material suppliers and consumer product markets. Some of the observed or expected impacts of new technology are (1) changes in the utility of a farm commodity as a raw material used in making consumer products (turbo milling of wheat flour and beam houses and new hide trims for cattle hides); (2) substitution of a synthetic for a farm commodity (corfam for leather and cellulose and petrochemical sources fibers for cotton and wool in textiles); (3) changes in market value of farm commodities because of change in utilization (use of low-grade potatoes, citrus and other products for which consumer demand has increased for processed forms); and (4) shifts in location of production, because of advantages or savings stemming from processing or preserving innovations, and developments in transportation.

During the past year market growth rates and the market shares attributable to farm commodities and to synthetics in soaps and detergents, textile fibers, glycerine, protein feed, sweeteners, shoes, perfumes and flavors and ethyl alcohol were analyzed. In each, agricultural commodities' share shows a lesser growth rate than its synthetic competitor and less than the market growth rate.

Interest in new crop opportunities continues. During the past year, kenaf as a potentially profitable crop source of papermaking raw material was appraised. Certain cropland areas of the deep south can be profitably used to grow kenaf, provided limiting factors such as: (1) Distance to processing facility, (2) yields, (3) availability of capital for purchase of harvesting equipment and (4) knowledge of cultural and on-the-farm processing and storage practices are accounted for in the enterprise development planning.

Industrial nonfood markets for farm products offer potentially profitable expansion opportunities. The paper industry, for example, uses large volumes of derivatives of farm products. Changing technology and differentiated growths among the industry's consumer products have changed the raw material demand profile. Industry-wide studies are necessary to relate dynamic behavior in these markets to changes in consumption patterns for agricultural commodities utilized in making the industry's products.

Processing innovations by marketing firms that give rise to new concepts in production locale, transport costs, and in consumer products are vitally important to producers. Dehydration, freeze-drying and irradiation pasteurization of foods are innovations in processing subject to recent study. Marketing of dehydrated foods has expanded rapidly in the past few years. Opportunities for savings in transport and in new compositional concepts for foods in both institutional markets and in further processed products may cause much greater future market growth and expansion of applications for dehydrated foods.

A product test of foam spray-dried milk was conducted in 8 nonprofit institutional food services in the Washington, D.C. metropolitan area. The foam spray-dried whole milk was rated acceptable for beverage use by the food managers. The study also revealed that current milk use and handling practices, health regulations, and cost can be expected to have an influence on the market possibilities for the product. Judging from the preliminary study, significant progress has been made toward the development of a beverage quality dry whole milk.

Both materials and technology are potential "exports" under a new concept that emphasizes self-help activity by recipient nations, and which also attempts to void conditions of assistance that tend to perpetuate causes for hunger and malnutrition. Work is underway which will catalog U.S. food resources as to their fitness, utility and costs for diet-improving activity. A second phase will determine the nature and economic profile of needs among potential recipients. When data are assembled and related a "knowledge bank" will be created for program-planners, private investors, and philanthropic groups to use in combatting hunger and malnutrition.

Irradiation pasteurization of foods is a concept developed from publicly financed research by the Atomic Energy Commission. Adaptation of this process by private industry firms will depend on the cost of the process and its benefits in terms of product quality and consumer acceptance. Research is being initiated in cooperation with the Atomic Energy Commission to conduct cost-benefit analyses of irradiation pasteurization for selected agricultural products.

During the year monographs were prepared for Harvard University on The U.S. Food and Fiber System in a Changing World Environment and The Technological Front in the Food and Fiber Economy for inclusion in a technical report by Harvard for the National Advisory Commission on Food and Fiber.

In the past year, an important accomplishment has been the completion of a long-range research project in the feed area. Purpose of this research was to evaluate the economics of the new feed ingredients developed by utilization researchers. The evaluation was based on an adaptation of a least-cost linear programming matrix which allowed a determination of the quantity of new feed materials that will meet the formula requirements for different animal rations at least cost, and the price range in which these feed materials must fall to make them competitive with other feeds supplying the same nutrients. Initial attention was given to alfalfa meals of differing protein contents. Eventually, consideration will be given to safflower, castorbean meal, and to mill feeds. Of importance to program guidance in this area is the development of this type of matrix for analysis, coupled with the fact that computers are now available at most of the laboratories and staff members will be able to make computer runs for other new feed ingredients to determine their intrinsic values in different animal rations.

An important phase of the utilization research program is the development of new and improved industrial uses of agricultural commodities. Major economic research efforts to provide guidance to the utilization research program on industrial uses was confined in the past reporting year to the use of starch in textile manufacturing, the impact of non-woven manufacturing on textile use, and future prospects for flaxseed.

The study of cereal starch use in textile processing indicates that its main competitive strength is in warp yarn sizing in woven goods manufacture where about 80 percent (or 350 million pounds) of all starch in textiles is used. Population growth and increasing per capita incomes have a positive (indirect) affect on the demand for starch in textiles. Also exerting positive influence are the trends toward (1) spun-fiber relative to filament yarn in total synthetics and (2) synthetic-natural fiber blends in total wovens. Negative influences include competition from nontextile materials and the replacement of woven textiles by knits, bonded fiber fabrics and others. The loss of the starch warp yarn sizing market from textile trends amounted to about 12.3 percent **over** a decade with two-thirds of the loss caused by encroachment of nontextiles and one-third caused by other constructions replacing wovens.

The study of the impact of the so-called nonwoven industry development on the use of farm products reveals many facets and complexities. In its broadest application the term covers three categories: (1) bonded fiber fabrics, (2) punched and needle felts, and (3) padding materials. The general concept of nonwovens as a recent development phenomena applies mainly to the bonded fiber fabrics (about 12 percent of nonwoven--as defined above--production) and to the needle-punched materials (8 percent) in the felts category. Recent annual rates of growth were 12 to 15 percent for bonded fiber fabrics and 11 percent for needle-punched materials.

Tentative results of the nonwoven study suggest cotton may have lost in excess of 15 percent of its market in automobile manufacture and that the "primarily cotton" category of the bonded fiber fabrics has been declining as a proportion of total production, although the total quantity (at 18 million pounds in 1964) has shown only a slight decrease.

The study of the future prospects for flaxseed reveals that its competitive strength in production has weakened over the last two decades (since World War II). Its weakening position in production was mainly due to (1) a constant (stagnant) yield level in the main producing areas while the yield of other crops were increasing and (2) a worsening of the price of flaxseed relative to the price of competing crops. Flaxseed's price has shown this weakness during a period when its production was declining, reflecting weaknesses in the market for its end-use products. Nevertheless, the flaxseed crop apparently has complementary and supplementary influences in the cropping systems that enhances its competitive strength. It has unique features not displayed by its main competitors. Consequently, it is a crop with no good substitutes for particular aspects of cropping systems on many farms in the tri-state producing area.

Continuing attention also has been focused on new food product and process developments. A number of food products developed by utilization researchers have reached a stage of development where determinations of market acceptance would be highly desirable in order to stimulate commercial interest in them. A contract has been negotiated with a private research firm to carry out the consumer phase of a retail store sales test of an improved beverage quality dry whole milk powder. Store cooperation has been obtained, questionnaires and audit forms formulated, and a container label and name for the product developed. The test is scheduled for late winter or early spring of 1968-69.

Public Food Programs

During the past year, an overall study of food program research needs was conducted in cooperation with the Consumer and Marketing Service. A long-range research plan was developed and an interagency research agreement consummated to facilitate attainment of these targets. Detailed work plans for FY 1968 were submitted and priorities established after a thorough overview of research needs.

In response to allegations of hunger, a special survey was conducted during May 1967 in the Mississippi Delta to determine the extent of food needs, how they were being met through the Food Stamp and Commodity Distribution Programs, and means by which unmet food needs among low-income families could be resolved. Information on food consumption, income, expenditures, level of living, and other factors affecting economic behavior and program participation were obtained from a randomly selected sample of approximately 6 percent of all families eligible for food programs in Washington County (Food Stamp) and Sunflower County (Commodity Distribution) in Mississippi. Information was obtained from program participants and eligible nonparticipants.

A preliminary report of findings was submitted in early June. Immediate program action was taken on most recommendations. A preliminary report was submitted to the Senate Labor Subcommittee on Manpower in July and is included in the hearing record.

Findings indicated that, with few exceptions, eligible persons were participating in the Commodity Distribution Program. A lesser number, about 48 percent of persons eligible, were receiving food stamps. It had been alleged that there was heavy nonparticipation among large families with little or no income and isolated rural families. Findings indicated, however, that nonparticipation was greatest among urban residents, one and two member families, and those with incomes in the upper range of eligibility. A major problem was lack of communications or disinterest on the part of eligible persons and families. Information from a 1965 study of eligible nonparticipants in the St. Louis, Missouri, Food Stamp Program is being tabulated fully to permit analysis and comparison of urban and rural patterns.

During the past year, a substantial effort was devoted to preparation of special reports relating to requirements in Program Planning and Budgeting. Included was a study of national needs and effective demands for family food programs. It was estimated that at least 10 million of the poor, by the accepted poverty definition would be currently ineligible for food stamps or donated commodities because of households, incomes, or assets exceeded criteria established in the states.

An evaluation was completed of the impact of greatly expanded commodity distribution to low-income families in Mississippi upon retail food sales. Although over 400 thousand persons were receiving food supplements in mid-1966, sales tax collections from retail food stores held at or near anticipated levels--making allowance for increases in food prices.

E. Location and Growth Economics

This area of work is interrelated with the four areas previously discussed. Studies relating to regional and interregional competition rely on considerations of both the supply and demand of farm products along with considerations of the physical efficiency of performing the various marketing functions. These

considerations form a basis for evaluations of the relative location and competitive advantage of individual regions or industries. The relative competitive position of producers and marketing firms in each industry is changing constantly. Changes in transportation rates, costs of inputs, available technology and the organization of industries in various areas have continuous impacts upon the position of each area. Constant evaluation of the changing competitive position of major areas and of prospective further changes is needed by potential investors in considering facilities for processing and storing the production in new and developing regions.

Livestock

A spatial model developed in the North Central Regional Marketing work was used to simulate interregional competition in the beef and pork sectors under several shifts in production, consumption, transportation rates and slaughter capacity.

Simulated alternatives in the beef sector: A 10- to 20-percent reduction in transportation rates for long distance hauls reduces total transportation cost \$18.5 million without affecting shipment patterns. Increasing slaughter capacity to the point where all cattle are slaughtered locally would reduce the national transportation bill for livestock and meat by \$35 million. Slaughter cattle production could be increased at minimum interregional transportation cost for cattle and beef in the Southeastern United States. Pork sector: A shift from slaughter hog to feeder pig production in the states surrounding the Corn Belt would reduce the cost of pork shipments more than the live animal transport costs would be increased.

Poultry and Eggs

The regional distribution of egg production is affected by (1) technical efficiency; (2) structural characteristics; and (3) institutional arrangements. Technical knowledge is equally available to all areas, but not uniformly applied. As a case in point, the structure of the Midwestern egg industry is such that it is less efficient in performing input-supplying and marketing functions and has lost ground in comparison to other areas. More recently, new types of organizations have also emerged in other regions to influence prices and/or promote more orderly marketing. Unless the Midwest finds an effective answer through organizations of its own, it may find itself further disadvantaged. Modernization of the Midwestern egg industry would involve (1) fewer and larger producing, input-supplying, and marketing units; (2) greater coordination of these functions; and (3) improved egg quality. Modernization would require substantial capital investment. Reduced costs for major inputs such as chicks and feed, and lower marketing costs might enhance producer returns and attract the necessary capital. Egg quality in the Midwest averages lower than in the Northeast, South, and on the West Coast.

Grain

A study of the influence of changes in transportation rates on the Midwest grain industry structure and practices is underway in cooperation with Oklahoma State University.

A study has been initiated at the request of the U.S. Army Corps of Engineers to evaluate the economic impact of extending the Missouri River waterway on the grain industry of the upper Missouri River Valley. This research will aid the Corps of Engineers in their decision concerning the feasibility of extending the Missouri River waterway from Sioux City, Iowa, to Yankton, South Dakota. It also will assist the grain industry of the upper Missouri River Valley in evaluating alternative locations for handling, storing and processing facilities, and market outlets if this extension were made.

Mixed Feed

A study of the cost and location of mixed feed plants in the Midwest is underway in cooperation with Purdue University. It will provide information and evaluations of various plant locations and distribution alternatives. Such information and analyses can be useful to firm investment decision-makers who are analyzing the feasibility of building a new plant or remodeling an existing one. If the decision is to build a new plant, these analyses would assist in evaluating alternative locations.

Soybeans

A study in cooperation with Purdue University analyzes the production and distribution of soybeans giving particular attention to how changes in transportation costs may affect the location and costs of processing and distributing soybeans and soybean products.

Fruits and Vegetables

Research in the Red River Valley (Minnesota-North Dakota) potato market indicates that production in that area has increased steadily from an annual average of 14.1 million cwt. in 1950-54 to 21.6 million cwt. in 1965-66. The Valley now accounts for 85 percent of the Minnesota-North Dakota production and 7.3 percent of the U.S. total. The processing market has expanded more rapidly than the tablestock market. The volume of potatoes sold for chipping has nearly tripled since the mid-1950's.

A study has been undertaken to determine production patterns within and among winter vegetable producing areas and distribution patterns of their produce among market centers of the U.S. consistent with optimization of consumer requirements, producer returns, and factor utilization as governed by specified qualitative and quantitative supply and demand constraints. Initial phases of

the study have emphasized conceptualizing and formulating a mathematical simulation of the winter vegetable industry.

Research to determine the competitive position of the North Central region in marketing fruits and vegetables has been undertaken in cooperation with the University of Wisconsin and other North Central states. Under contract, Agri Research, Inc., is beginning a study to determine the existing canning and freezing capacity in the region. Later phases of the study will include demand analyses, and studies to determine the feasibility of establishing additional processing facilities. This project is just getting underway; preliminary results are not available.

Peanuts

Work has been started on the development of an interregional analysis of the peanut industry. The State Experiment Stations in Georgia and Texas, under contract with ERS, are well along on collecting and analyzing data concerning peanut grower harvesting and marketing practices and the costs associated with these activities in their respective areas. This information, along with a considerable amount of other data from various sources will provide the basic input data for an interregional model of the industry.

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Line Project Check List -- Reporting Year October 1, 1966, to September 30, 1967--Continued

Work and project number	Work and line project titles	Work locations during past year	Line project included in Summary of: progress : (Yes-No)	Activity and page number
ME 4-35	The potential market for sterilized milk concentrate in selected types of institutions	Washington, D.C. Madison, Wis.	No	
ME 3	Economics of marketing fruits, vegetables, horticultural specialties, tree nuts, and special crops including peanuts, sugar and tobacco			
ME 3-8 (Rev.)	Competitive position of western processed fruits and vegetables <u>1</u> /	Berkeley, Calif.	No	
ME 3-22	Costs and efficiency of looseleaf tobacco auctions <u>1</u> /	Lexington, Ky.	No	
ME 3-24 (Rev.)	Optimizing use of flue-cured leaf tobacco grades in producing tobacco strips	Washington, D.C.	No	
ME 3-30 (Rev.)	Changes in structure of wholesale fresh fruits and vegetable markets <u>1</u> /	Washington, D.C.	Yes	B-14
ME 3-75 (Rev.)	Economic analysis of the structure and perform- ance of the Red River Valley potato market	St. Paul, Minn.	Yes	E-30
ME 3-76	Competitive relationships in marketing citrus products <u>1</u> /	Gainesville, Fla.	No	
ME 3-81 (Rev.)	Economic evaluation of the commercial utilization pattern for peanuts at the shellers' level	Washington, D.C.	Yes	E-31
ME 3-88	An economic analysis of federal market orders for fruits, vegetables, and potatoes <u>1</u> /	Washington, D.C.	No	
ME 3-90	Prices and margins in marketing fruits and vegetables	Washington, D.C.	Yes	B-13
ME 3-92 (Rev.)	Economics of marketing sugar	Washington, D.C.	Yes	B-15
ME 3-94	Economics of marketing floricultural products	Washington, D.C.	Yes	D-24
ME 3-95	The economic performance, status, trends, and prospects for the woody ornamental industry	Washington, D.C.	Yes	B-14
ME 3-96	Economic effects of noncaloric sweeteners on the sugar industry <u>1</u> /	Washington, D.C.	Yes	B-15
ME 3-97	Existing capacity and resource requirements for processing fruits and vegetables in the Southern region	Clemson, S.C.	Yes	A-7
ME 3-98	An equilibrium analysis of the production, distribution, and marketing of winter vegetables	Raleigh, N.C.	Yes	E-30
ME 3-99	Marketing margins and costs for sugar beets, sugarcane, peanuts, and leaf tobacco for selected consumer products	Washington, D.C.	Yes	B-15

1/ Discontinued during reporting year.

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Line Project Check List -- Reporting Year October 1, 1966, to September 30, 1967 -- Continued

Work and project number :	Work and line project titles :	Work locations during past year :	Line project included in	
			Summary of progress (Yes-No) :	Activity and page number :
ME 3-100 :	The competitive position and potential of the : North Central region in producing and marketing : fruits and vegetables	Madison, Wisconsin :	Yes :	E-31
ME 3-102 :	Market analysis and development of the desert : citrus industry of Arizona and California	Tucson, Arizona :	No :	
ME 3-103 :	Analysis of consumer purchases of selected fresh : and processed fruit products in relation to : consumer characteristics geographic region, and : other market factors	Washington, D.C. :	Yes :	D-24
ME 3-105 :	Economics of marketing Hawaiian horticultural : crops	Honolulu, Hawaii :	Yes :	D-24
ME 9 :	Development and performance of markets			
ME 9-1 :	Marketing situation and outlook reports	Washington, D.C. :	Yes :	A-9; B-17
ME 9-2 :	Farm-retail price spreads, the marketing bill, : and other statistics on entire marketing process	Washington, D.C. :	Yes :	A-9; B-17, 18
ME 9-3 :	Measurement of aggregate economic relations in : marketing farm food products	Washington, D.C. :	Yes :	B-18
ME 9-4 :	Market potential investigations for products : from new crops for industrial feed, food, or : pharmaceutical use	Washington, D.C. :	Yes :	D-25
ME 9-5 :	Economic impact of innovations in food processing	Washington, D.C. :	Yes :	D-24, 25
ME 9-6 :	Impact of synthetics on the domestic market for : products of agricultural origin	Washington, D.C. :	Yes :	D-25
ME 9-10 :	The costs and changing role of packaging in the : marketing of agricultural food products <u>2/</u>	Washington, D.C. :	Yes :	B-18
ME 9-11 :	Evaluation of the institutional market for food	Washington, D.C. :	Yes :	A-10
ME 9-12 :	National surveys of food consumption in house- : holds for the mid-1960's--guidelines for food : marketing	Washington, D.C. :	No :	
ME 9-13 :	Food stamp program research	Washington, D.C. :	Yes :	D-28
ME 9-14 :	Facilitating participation in the national : school lunch and related child nutrition programs	Washington, D.C. :	No :	
ME 9-15 :	Characteristics and requirements of industrial : non-food markets for farm products <u>2/</u>	Washington, D.C. :	Yes :	D-25
ME 9-16 :	Improving data collection and analysis on market : performance	Washington, D.C. :	Yes :	A-9
ME 9-17 :	Economics of inventory control and space manage- : ment in warehousing agricultural commodities <u>1/</u>	Washington, D.C. :	No :	

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1/ Discontinued during reporting year.

2/ Initiated during reporting year.

Line Project Check List -- Reporting Year October 1, 1966, to September 30, 1967

Work and project number	Work and line project titles	Work locations during past year	Line project included in	
			Summary of progress (Yes-No)	Activity and page number
ME 2	Economics of marketing animal products			
ME 2-48	Marketing Economics Division cooperation in NCM-26 project, "Changing market structure and organization of Midwest dairy industry" <u>1</u> /	Washington, D.C.: Urbana, Ill.	Yes	E-29
ME 2-53	Information systems for managerial decision-making in fluid milk plants <u>1</u> /	W. Lafayette, Ind.	No	
ME 2-54	Cost-efficiency studies in marketing livestock, meats, and meat products <u>1</u> /	Washington, D.C.	Yes	A-4
ME 2-55	Determining costs, margins, and trends in the poultry and egg industries	Washington, D.C.	Yes	B-12
ME 2-56	Quarterly measurement and analysis of costs, margins, and efficiency for 70 selected fluid milk processing and distributing plants	Washington, D.C.	No	
ME 2-57	Efficiency in managing the total milk supplies in fluid milk markets	Washington, D.C.	No	
ME 2-58	Evaluation of existing and proposed programs of wholesale beef price reporting in southern United States <u>1</u> /	College Station, Texas	No	
ME 2-59	Optimum location of livestock and meat marketing facilities in the Southern region	Raleigh, N. C.	No	
ME 2-60	The impact of changing market structure upon the competitive position of the dairy industry in the South	Experiment, Ga.	No	
ME 2-61	Improving the efficiency of egg and production- input marketing	Washington, D.C.: Durham, N. H.: Athens, Ga.	Yes	B-12
ME 2-62	Livestock marketing efficiency in the West	Denver, Colo.	No	
ME 2-63	Interregional competition in the poultry and egg industries	Washington, D.C.: St. Paul, Minn.	Yes	E-29
ME 2-64	Factors affecting spreads between farm and consumer prices for livestock and meats	Washington, D.C.	Yes	B-11
ME 2-65	Market structure and competitive behavior in the dairy industry <u>2</u> /	Washington, D.C.	No	
ME 2-66	The market potential for newly developed animal products or substitutes <u>2</u> /	Washington, D.C.	No	
ME 2-67	Pricing and market information systems in the livestock-meat economy <u>2</u> /	Washington, D.C.	No	
ME 2-68	Market structure and optimum location of livestock feeding enterprises <u>2</u> /	St. Paul, Minn.: College Station, Texas	Yes	E-29

1/ Discontinued during reporting year.

2/ Initiated during reporting year.

Line Project Check List -- Reporting Year October 1, 1966, to September 30, 1967--Continued

Work and project number :	Work and line project titles	Work locations during past year :	Line project included in Summary of: Activity progress : and page (Yes-No) : number
ME 9-18	: Evaluation of the sales effectiveness of selected : advertising and promotion techniques for : broilers <u>1/</u>	: Washington, D.C. :	: No : : : : : : :
ME 9-19	: Low-income rural family expenditures and con- : sumption related to the food stamp and direct : distribution programs <u>1/</u>	: Washington, D.C. :	: No : : : : : : :
ME 9-20	: Effect of varying levels of promotional invest- : ment on the consumption of milk and milk products; : and the relationship of returns to promotional : investment <u>1/</u>	: Washington, D.C. :	: No : : : : : : :
ME 9-21	: Economics of pricing, merchandising, and labor : utilization practices in retailing meat products : <u>1/</u>	: Washington, D.C. :	: No : : : : : : :
ME 9-23	: Economics of alternative food nutrient sources : for food aid programs <u>2/</u>	: Washington, D.C. :	: Yes : D-25 : : : : : :
ME 10	: Economics of marketing fibers, grains, forage : crops, and oilseeds	:	: : : : : : : :
ME 10-1	: Market potential for safflower oil	: Washington, D.C. :	: Yes : D-23 : : : : : :
ME 10-2	: An analysis of the effects of changes in trans- : portation costs on the regional locations of the : flour milling industry	: Ames, Iowa :	: Yes : E-30 : : : : : :
ME 10-3	: Price spreads, margins, and costs for grain and : grain products	: Washington, D.C. : : Davis, California:	: Yes : B-13 : : : : : :
ME 10-4	: Marketing margins for fats and oils in selected : consumer products	: Washington, D.C. :	: Yes : B-13 : : : : : :
ME 10-5	: Cotton ginning efficiency and cost	: Tucson, Arizona : : Stoneville, Miss.:	: Yes : A-6 : : : : : :
ME 10-6	: Organization, operation, and efficiency of the : marketing system for raw wool	: Washington, D.C. :	: Yes : C-19 : : : : : :
ME 10-7	: Structure and practices of the western grain : marketing industry <u>1/</u>	: Washington, D.C. : : Tucson, Arizona :	: No : : : : : : :
ME 10-8	: Structure and performance of the U.S. grain : marketing system	: Washington, D.C. : : Stillwater, Okla.:	: Yes : E-30 : : : : : :
ME 10-9	: Changing structure and performance of the major : oilseed markets in the U.S.	: Washington, D.C. : : Lafayette, Ind. :	: Yes : E-30 : : : : : :
ME 10-10	: Cost of handling and storing grains, fibers, : oilseeds, and their byproducts	: Washington, D.C. : : Stoneville, Miss. : : Tucson, Arizona :	: Yes : A-6 : : : : : :

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1/ Discontinued during reporting year.

2/ Initiated during reporting year.

Line Project Check List -- Reporting Year October 1, 1966, to September 30, 1967--Continued

Work and project number	Work and line project titles	Work locations during past year	Line project included in	
			Summary of: progress (Yes-No)	Activity and page number
ME 10-11	Price-quality relationships for cotton and cotton products	Clemson, S.C. Stoneville, Miss.	Yes	A-5
ME 10-12	Marketing margins, practices, and costs for fibers and textiles <u>2/</u>	Washington, D.C.	Yes	A-6
ME 10-13	The dimensions and appraisal of the mixed feeds industry	Washington, D.C. Lafayette, Ind.	Yes	A-7
ME 10-14	Demand and development for fibers, grains, and oilseeds products	Washington, D.C.	Yes	D-26, 27
ME 10-15	Analysis of grain transportation trends in the U.S.	Washington, D.C. Storrs, Conn.	No	
ME 10-17	Quality evaluation of wheat processing and distribution optimization of wheat products	Washington, D.C.	Yes	D-22
ME 11	Competition and pricing in the markets for farm products, factors, farm supplies and transportation			
ME 11-1	Economic evaluation of grades and standards used in agricultural marketing <u>2/</u>	Washington, D.C. Philadelphia, Pa.	Yes	C-20
ME 11-2	Development and maintenance of annual indexes of rates and total costs for the transportation of agricultural commodities, and analysis of the pricing of agricultural transportation services <u>2/</u>	Washington, D.C. Berkeley, Calif. College Station, Texas	Yes	B-16
ME 11-3	Agricultural commodities on domestic waterways: rates and flows	Washington, D.C.	No	
ME 11-4	Economic evaluation of the potential for agricultural development in Alaska <u>2/</u>	College, Alaska Davis, Calif. Raleigh, N.C. Washington, D.C.	No	
ME 11-5	Patterns of growth and change in the structure of agricultural marketing and supply industries and their probable economic consequences <u>1/</u>	Washington, D.C.	Yes	B-16
ME 11-6	Pricing practices of food firms of selected products <u>1/</u>	Washington, D.C.	No	
ME 11-7	Effects of selected Federal regulatory and service activities on the market structure, conduct, and performance of agricultural marketing and processing industries <u>1/</u>	Washington, D.C. Lafayette, Ind.	No	
ME 11-8	Effect of transportation structure on the South's grain marketing structure	Washington, D.C.	No	
ME 11-9 (Rev.)	Changing structure-conduct-performance of farm-input industries and their coordination with farms <u>2/</u>	Washington, D.C. Lafayette, Ind. Lincoln, Neb.	Yes	B-16

1/ Discontinued during reporting year.

2/ Initiated during reporting year.

